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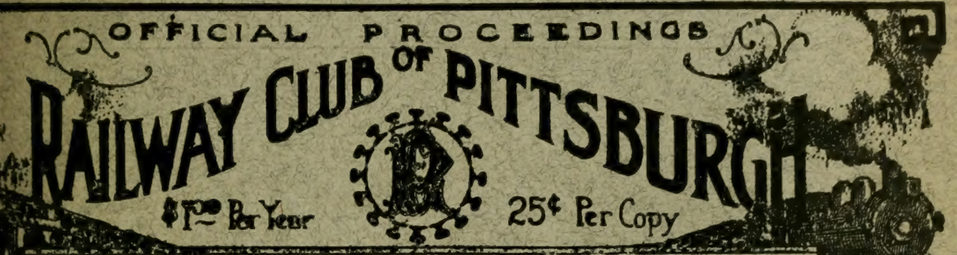

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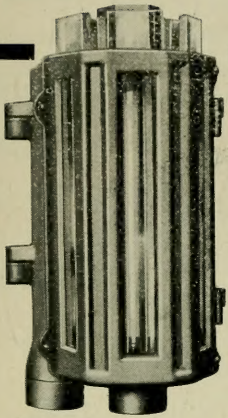

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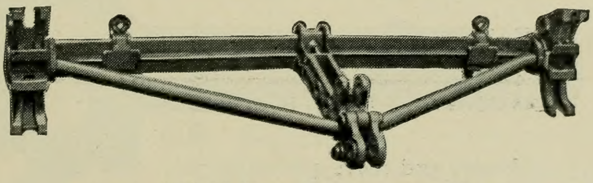

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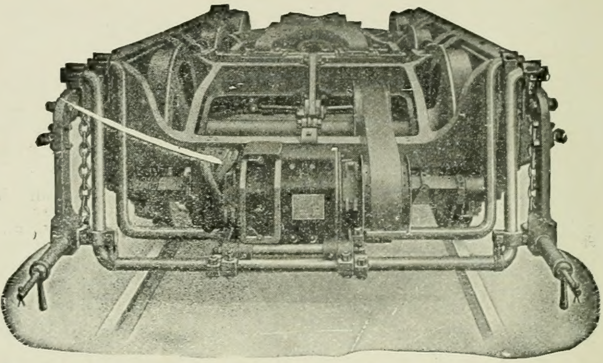

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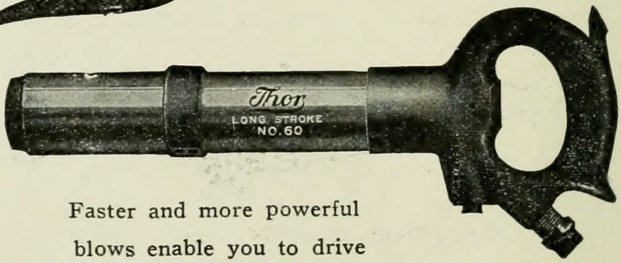

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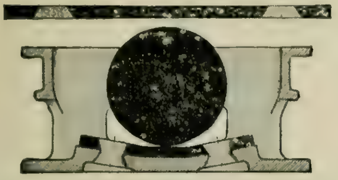

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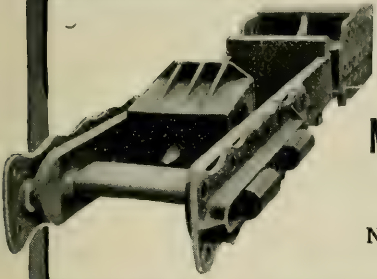

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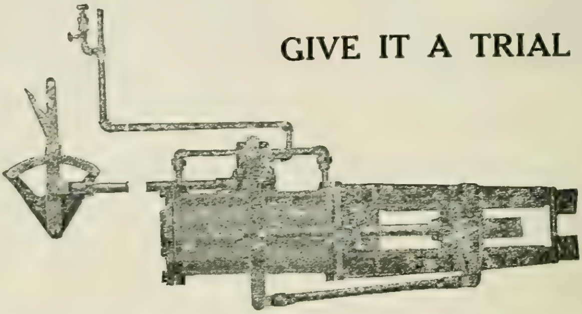

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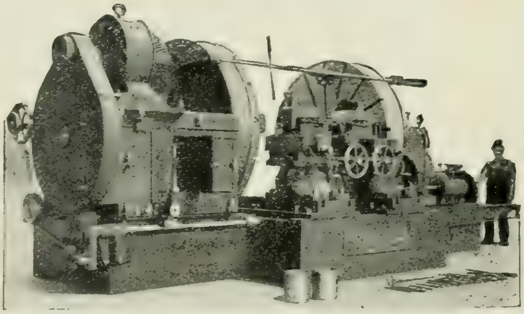

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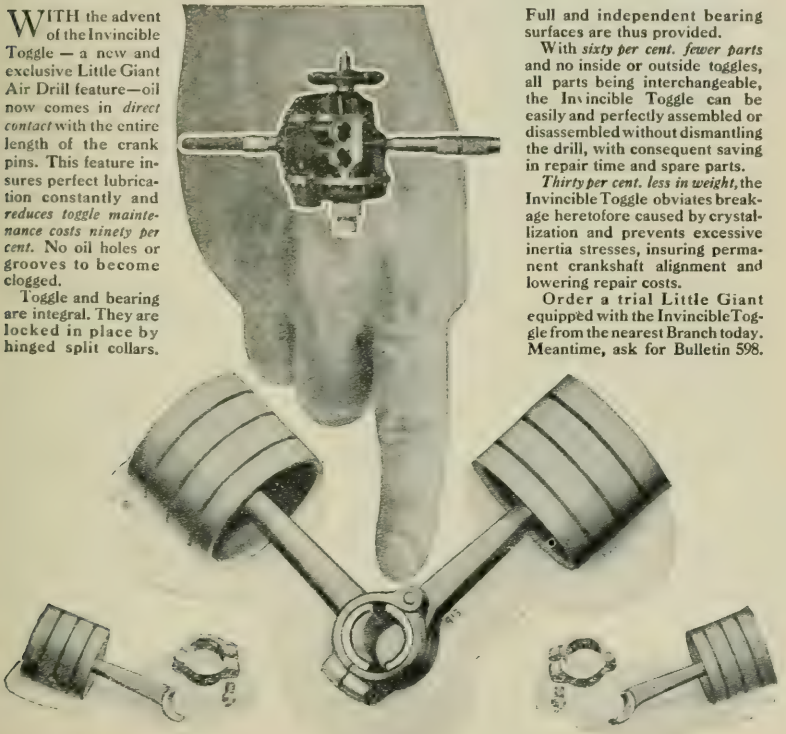

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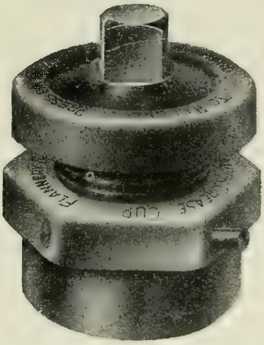

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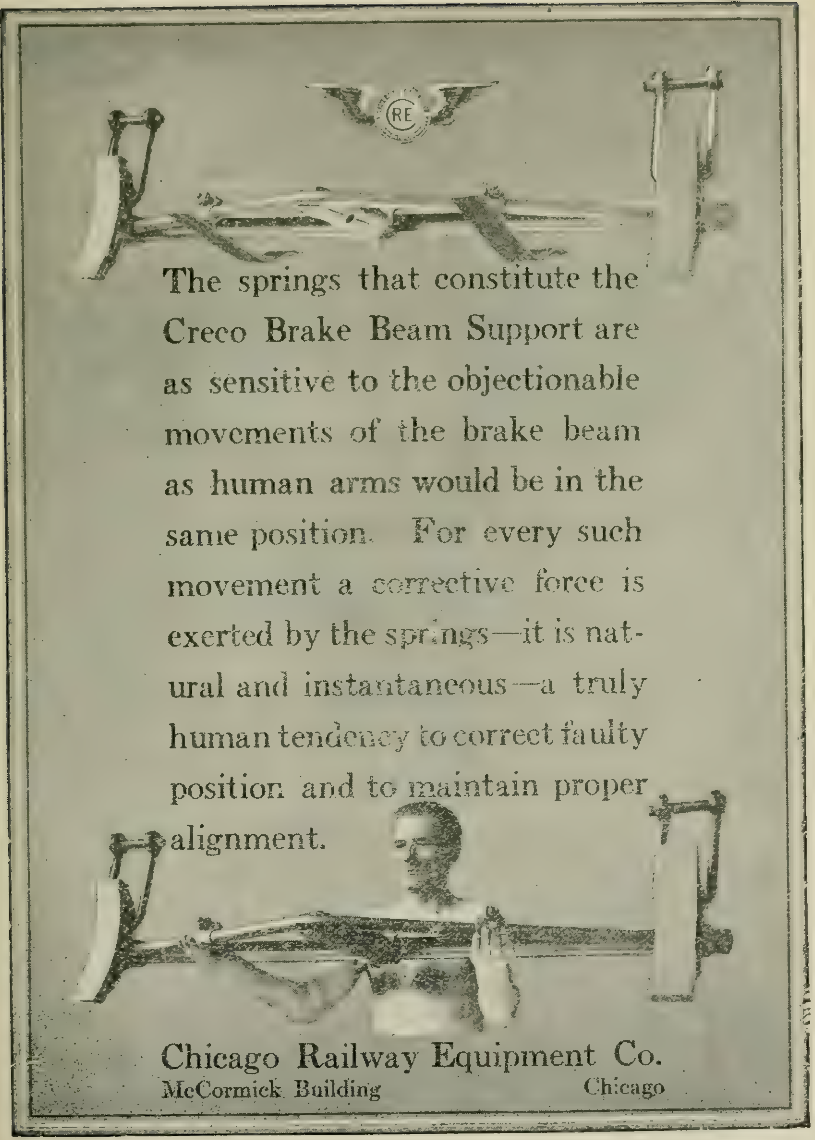

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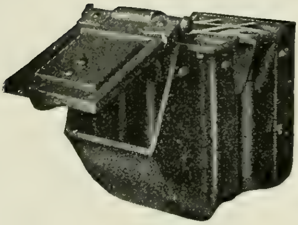

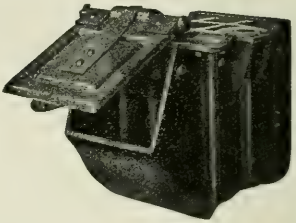

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Meeker, H. B.
Merscher, John
Meschter, E. F.
Millar, C. W.
Mitchell, F. K.
Moir, W. B.
McCornish, W. C.
McConn, G. E.
McIntyre, F. A.
McNeill, J. Edward
Ogden, Geo. D.
Painter, Joseph
Parker, W. G.
Patterson, J. E.
Pehrson, A. K.
Provost, S. W.

Rabold, W. E.
Ralph, Wm. E.
Rauschart, E. A.
Read, S. C.
Redding, D. J.
Redding, R. D.
Reynolds, D. E.
Rhodes, W. H.
Rick, R. C.
Rogers, Robert
Rowe, J. L.
Sattley, E. C.
Schwab, Charles
Searles, E. J.
Seiss, W. C.
Shannon, David E.
Shellenbarger, H. M.
Smith, Robert M.
Stenson, Geo. A.
Stilwell, K. E.
Stucki, A.
Trueblood, H. J.
Walter, W. A.
Willoughby, F. R.
Winell, K. O.
Wolf, H. M.
Wright, John B.
Young, F. C.

VISITORS

Anderson, J. C.
Ashton, H.
Bennett, Jas. G.
Campbell, C. W.
Collins, H. E.
Crain, M. P.
Cunningham, W. P.
Dotterweich, E. J.
Elkin, W. C.
Graham, J. A.
Gunnison, W. L.
Hockett, C. M.
Jex, W. S.
Jungbluth, Herbert
Luddy, W. E.
Lynch, E. K.
Marrison, R. C.
Mattsson, Valf.
Mills, K. N.
Mitchell, Wm. J.
Mott, Wm. E.
Newburn, T. W.
Paxton, James L.
Perkins, F. R.
Rhodes, W. H., Jr.
Sayre, M. E.
Smith, Sion B.
Wray, Edward

The call of the roll was dispensed with, the record of attendance being obtained through the registration cards.

The reading of the minutes of the last meeting was dispensed with as they are to appear in printed form.

The secretary read the following list of applications for membership:

Ayres, Willis C., Gang Fore., Penna. System, 334 Academy Street, Carnegie, Pa. Recommended by W. C. Seiss.

Cooper, R. F., Gang Fore., Penna. System, 7142 Spencer Street, E. E. Pittsburgh, Pa. Recommended by R. C. Rick.

Hattman, H. T., Upholsterer, P. & L. E. R. R., Fourth and Mill Streets, Coraopolis, Pa. Recommended by C. H Forrest.

Holiday, Harry, Asst. to Vice Pres., Forged Steel Wheel Co., 4214 Murray Ave., Pittsburgh, Pa. Recommended by Frank J. Lanahan.

Hulick, E. G., Gang Fore., Penna. System, Pitcairn, Pa. Recommended by P. H. Goda.

Leach, J. T., Asst. M. M., Penna. System, 312 W. Park Street, Rochester, Pa. Recommended by C. T. Hoffman.

Lenz, Wilbur W., Asst. C. C., Penna. System, Purch. Dept., 1013 Penn Ave., Room 301, Pittsburgh, Pa. Recommended by J. W. Hagerty.

Mitchell, William J.., Gang Fore., Penna. System, 8012 Westmoreland Ave., Swissvale, Pa. Recommended by P. H. Goda.

McCornish, W. C., Asst. to Wheel Shop Fore., Penna. System, 3952 Wind Gap Ave., Twentieth Ward, Pittsburgh, Pa. Recommended by W. C. Seiss.

Pedicord, W. J., Account Clerk, Penna. System, 1013 Penn Ave., Pittsburgh, Pa. Recommended by A. W. Abel.

Shryock, H. W. Supvr. Purch. Dept., Penna System, 225 Broad Street, Sewickley, Pa. Recommended by J. W. Hagerty.

Sparks, Hynes, The T. H. Symington Co., 233 Broadway, New York City. Recommended by F. H. Freshwater.

Stiles, Frank H., Dist. Sales Mgr., Barco Mfg. Co., 222 S. Central Ave., Wollaston, Mass. Recommended by E. A. Rauschart.

Young, F. C., Rep., Westinghouse Air Brake Co., 200 Westinghouse Bldg., Pittsburgh, Pa. Recommended by John B. Wright.

Zin, Percy, Standard Steel Spring Co., Fifth Ave., Coraopolis, Pa. Recommended by John E. Haynes.

PRESIDENT: As soon as these applications have been approved by the Executive Committee, the gentlemen will become members upon payment of the year's dues.

Fellow Members of the Pittsburgh Railway Club:

At our last meeting I had the honor of sincerely thanking you for the distinction which you had conferred upon me by electing me to the Presidency of our Club. Since that time, as many, or probably most of you, are aware, the Pennsylvania Railroad Management, in connection with other changes following the death of Colonel McCrea, has transferred my work from the Central to the Eastern Region of the System. My headquarters are, therefore, at present in Philadelphia and will, doubtless, continue to be for some time to come.

Under these circumstances, I felt it no more than proper to offer my resignation and thus give the Club an opportunity to select a President who could be more certain of regular attendance at the meetings than conditions may permit in my case. I, therefore, placed my resignation in the hands of the executive committee, but the committee did me the further honor, which I deeply appreciate, of refusing to accept it, and instead urgently called upon me not to relinquish the office, but to serve out my term, and give the Club as much time and attention as my other duties will allow.

Feeling it impossible to decline a request so courteously couched, I told the committee that I would do my best. I should like now to say to the Club at large that I will endeavor to the extent of my ability to attend and preside at our monthly meeting unless and until the executive committee, in its wisdom, sees fit to accept my resignation and place the office of President in the hands of a man better able to give the work and activities of the Club the degree of personal supervision and contact which they merit.

It had long been my thought that, should the honor of the Presidency ever fall to my lot, I should like to make each of our meetings the occasion for saying a few words to the members upon some subject of general interest and importance to the Club. Tonight I wish to address to you a few brief remarks upon the subject of loyalty—not to preach a sermon or moralize, but merely to point out some matters of very great practical importance.

Many of you have been connected with railroad and allied industries work for long periods of years. You know that in the older days, when we did not have to talk about the "Railroad Problem," because there was no such thing, there was no characteristic which marked the typical railroad man of the United States, whether officer or worker in the ranks, more distinctively than the spirit of intense personal loyalty and devotion to his job, his Company and the transportation service in general. We all know that for various reasons that fine spirit of loyalty has been impaired in recent years. I have not the time, nor is this the occasion, to discuss the causes. I merely want to point out that as far as the future is concerned one of the paramount necessities before us is to restore that sense and spirit of personal loyalty which was once the great strength of American railroads as leading institutions in our country.

The need for loyalty grows as the number of employes increases with the expansion of transportation. Today we have nearly 2,000,000 railroad workers of all grades in the United States. They represent a level of intelligence and capacity distinctly above the average. They are the largest single group of workers in this country, in what is practically one industry, because our railroads, though separate corporately, are all physically connected and from many viewpoints must be regarded as one System, rendering a nation-wide service. If this great group of workers unite their efforts and endeavors to good and constructive ends, they can be the greatest power for advancement that our country possesses. If they unite for wrong purposes they can be a tremendous power for evil. If they fail to unite at all, and work at cross purposes with each other, and with the companies which employ them, they will constitute an almost insurmountable stumbling block in the way of national progress.

It is the last named condition that we must exert all our energies to avoid. That is the real danger that threatens—the danger of disunion, and lack of co-operation. I have too high respect for my fellow-workers in the railroad service to feel that any major proportion of them can or will ever unite to a bad purpose. If we can avoid the peril of disunion as between the employes and the employing companies, we are certain to have this great body of men and women unite to good and constructive policies.

The only thing that can bring this about is loyalty—loyalty to the job, to the profession or business of railroading, and to the particular company or system by which any given man or woman is employed. A man cannot give his first allegiance to a labor union and be genuinely loyal to the company for which he works or to the transportation service in general. Nor can he know real loyalty if his first devotion is to a politician who promises to raise wages by law if elected.

The science of economics tells us that in the long run there is only one source from which wages can be paid in any calling. That source is production. Wages come out of what labor and capital jointly create, whether services or commodities. This is a sound economic reason why every railroad or indeed any other worker should be loyal to his job. If he is disloyal he is undermining the very source from which his own pay envelope is filled.

I do not mean to imply that labor unions are inherently bad, or that a good man cannot be a union man, or that collective bargaining is wrong. On the contrary our Company affirmatively recognizes the right of a man to belong to a union if he so chooses, provided he makes it his first business and duty to be a loyal employe while he permits his name to stay on the payroll. As for collective bargaining, our Company emphatically approves it and through our plan of employe representation has an actual system of collective bargaining in practical and highly successful operation with over 200,000 employes.

Loyalty has been defined as, "The willing and practical and thorough-going devotion of a person to a cause." What does that mean as applied to railroads? What is the cause to which a good railroad man devotes himself? I think it may be stated under three headings: First, the rendering of good transportation service to the public; second, the protection of the property and the honest investments behind the property; third, the safeguarding of the occupation itself, so that railroading may be preserved as an honorable, satisfying and properly remunerative method of earning one's livelihood.

I have taken up this subject tonight on the occasion of my first appearance before you as President, for the reason which I stated in the beginning, viz., that the restoration and upbuilding of the spirit of loyalty among the great masses of railroad workers is, in my firm belief, the greatest of all our railroad problems. This message, if I have succeeded in conveying it, is especially appropriate to the members of this

Club, who are either railroad workers themselves or interested in the industries closely affiliated with railroading, and who, without exception, are in positions of more than average opportunity to carry weight and influence with others. It seems to me there is no more important resolve that any of us can make for the coming club year than to bear in mind this paramount importance of loyalty, and never to omit an opportunity of bringing home these truths when the occasion offers.

MR. A. E. ANDERSON: Mr. President, when you started your remarks I feared they would lead to a question of the Executive Committee accepting your resignation. I am very glad to hear that they showed such good sense as not to do that.

In that connection, I think it is another instance of Pittsburgh's generosity in loaning our President to Philadelphia subject to his convenience. The Pennsylvania Railroad is now being run by Pittsburgh men. Presidents McCrea and Rea and Mr. Maxfield were all taken to the east, and now Mr. Ogden, and they have sent Mr. Elisha Lee out here in succession to the son, McCrea, for a course in executive training for the purpose of withdrawing him later to Philadelphia. Wherefore, it proves that Pittsburgh "pep" in Philadelphia atmosphere is not out of place at all.

Therefore, I would move that we commend the action of the Executive Committee in refusing to accept the resignation of our President.

The motion was duly seconded and passed by a unanimous vote.

PRESIDENT: Gentlemen, we have the rare privilege this evening of having with us Mr. William E. Mott, Director of the College of Engineering, Carnegie Institute of Technology, who will address the Club upon the subject, "What the Carnegie Institute of Technology Means to the Railroads."

I had the pleasure of dining with Mr. Mott this evening and during our very pleasant conversation he inquired if I knew his brother-in-law, Billy Coughlin. I said, "I certainly do. He is one of my very dearest friends." He is Engineer of Maintenance of Way of the Pennsylvania Railroad and a very highly skilled man in his profession. I mention that because it has given me the personal touch with Mr. Mott. It affords me very great pleasure to introduce him to you.

"WHAT CARNEGIE INSTITUTE OF TECHNOLOGY MEANS TO THE RAILWAYS."

By W. E. Mott, Director, College of Engineering, C. I. T.

Mr. President and Members of the Railway Club of Pittsburgh:

It is my pleasant task this evening to convey to my audience a comprehensive idea of what the Carnegie Institute of Technology really is and what service it may render to industry and business,—the railways in particular. In the time at my disposal I can not go into much detail as to courses of instruction, equipment or plant. I shall review brifiy the main elements in our organization and touch upon the many and varied fields of knowledge in which we give instruction. At best I can do little more than endeavor to interest you in this great technical institution founded and so generously endowed by Andrew Carnegie, but I do wish to emphasize the fact that no educational foundation of this character can flourish in isolation, absorbed in problems and tasks which come to it second hand, so to speak. On the contrary, its success is measured largely by the intimacy of its contacts with the social and industrial life of which it should be an integral part, otherwise its product—the young men and women who go forth as graduates—will find themselves out of touch with their new environment and so, unable to utilize to the utmost that training and skill which they may have acquired at great cost both in money and in effort.

One of the most important developments during recent years has been the effort on the part of educational institutions to more clearly understand the point of view of those whose interests they serve. The old monastic ideas of carrying on an educational program in cloistered ease and quiet are gone forever, at least for engineering schools, and we want our students to be accustomed to the requirements which they must meet upon graduation. Thus only will they become useful employees and so avoid months and years of wasted effort. To train the young man to understand the viewpoint of his older fellow worker is a more difficult problem, but even here something may be accomplished during the four years of a college course. I need scarcely point out that in order to accomplish the ends just mentioned, the closest co-operation and mutual understanding as between industry and education are indispensable.

The Carnegie Institute of Technology is an integral part of that great foundation known as the Carnegie Institute. Many of our citizens do not understand the relationship between the two.

Early in the '90s Andrew Carnegie gave to the citizens of Pittsburgh the Institute which bears his name and the first "Founder's Day" was celebrated in 1896. In 1907 the present building was completed and the celebration of that year was a notable event, one to which were invited many distinguished men and women. Art and literature, science and politics, each contributed its outstanding figures on that important Founder's Day. You all know what a vital element in the intellectual life of Pittsburgh the Institute provides and how it contributes each year in greater and greater measure to the education of the masses. The permanent exhibits furnish instruction and stimulation to thousands of school age as well as to their elders. The International Exhibition of paintings—built up through the efforts of Dr. John W. Beatty and now under the direction of Mr. Homer St. Gaudens—is an annual event of great importance in the world of art and an inspiration to all of us who are privileged to see these wonderful collections of the work of the leading painters ot today. Many other collections illustrative of all phases of the arts—pure and applied—are exhibited from time to time.

The Department of the Museum, since its beginning under the direction of Dr. W. J. Holland and today guided by Mr. Douglas Stewart, is likewise an invaluable link in the educational system of Pittsburgh. The giant Diplodocus proved to be the forerunner of greater things to come and has carried the fame of Carnegie and Holland to many lands. Less spectacular, but no less interesting and important, are the beautiful and endless examples of what nature, including man himself, has produced through the ages both recent and remote.

In addition to the exhibits—many lectures are given during the year under the auspices of the Departments of the Fine Arts and the Museum. These lectures are open to the public and are delivered by men who are eminent in the many fields exemplified by these Departments of the Institute.

The Carnegie Library—the parent organization and branches—as well as the many Carnegie libraries, great and small, scattered over this country and abroad—is a very real part of our every day life; it literally comes into the homes of each one of us. Under the able direction of Dr. John H. Leete and his predecessors, the Central Library has become one of the great libraries of the country. We can well believe that none of Mr. Carnegie's philanthropic gifts have yielded greater intellectual dividends than have the libraries. The technological library containing more than 70,000 volumes provides an unexcelled service to the scientific and engineering interests of Pittsburgh.

On Saturday evenings and Sunday afternoons during nine months each year the great organ in the Music Hall, recently rebuilt and unexcelled in this country, draws hundreds of devoted listeners—strangers many of them—but always a body of men and women—young and old—rich and poor, who are inspired and stimulated by the rich programs rendered on this organ by Dr. Charles Heinroth, Director of the Department of Music.

To these four departments of the Carnegie Institute, namely, the Fine Arts, the Museum, the Library and Music, was added a fifth—the Department of the Technical Schools. In 1900, Mr. Carnegie offered to provide this new unit in his already great organization—provided the City of Pittsburgh would purchase a site for the school. A tract of more than 30 acres, bordering on Schenley Park, was bought by the city and in the fall of 1905 the work of the schools was inaugurated. The land holdings of the Institute of Technology have since been approximately doubled by purchases on Forbes street and Woodlawn avenue.

The school, started under such favorable conditions, grew rapidly under the guiding hand of its first Director, Dr. Arthur A. Hamerschlag, whose title was later changed to that of President, Carnegie Institute of Technology.

Owing to the wide publicity connected with the establishment of this richly endowed technical school, two erroneous ideas became prevalent and persist to this day even in the minds of many citizens of Pittsburgh. The first is the impression that the institution is a glorified trade school and the second error is the report that the facilities of the school are so over-crowded that few students are able to gain access to our class rooms and laboratories. Frequently visitors come to us who are astonished to find how diversified are our interests and activities. The second error is more harmful—the misinformation which many parents and young people glean—namely, that it is useless to apply for admission to Carnegie Institute of Technology, that it is already overcrowded! From time to time during the past 18 years there have been occasions when certain courses in departments of the schools—as, for instance, the Music Department—might have registered all the students they could conveniently or effectively teach, but this situation is neither general throughout the school nor chronic in any one department. Properly qualified and talented students can always secure admission and are welcomed.

The first students were graduated in 1908 and soon thereafter it became evident that degrees must be awarded upon the successful completion of four year courses of study. The charter of the Carnegie Institute does not give its Trustees the right to grant degrees and therefore its Department of Technical Schools was powerless to satisfy the requests of its graduates, that they be awarded the bachelor's degree. Accordingly, a new charter was applied for and granted by the State authorities to the Trustees of the Carnegie Institute of Technology. As regards personnel, this new board is identical with that of the Carnegie Institute, but legally it is a distinct body. While this legal distinction has been drawn for the purpose above indicated, practically the old relationships are still in force and the closest and most friendly co-operation obtains between all departments of the Institute and the Institute of Technology.

Degrees were first granted in 1912 and then, and since, academic awards have been granted only for work done in residence. Two honorary degrees have been awarded, one to Dr. Anderson, the first librarian of Carnegie Library, and the other to our trustee and fellow Pittsburgher, William McConway.

Before taking up more in detail the work of the Carnegie Institute of Technology, I would call your attention to the fact that while the applications of scientific theories and facts to the endless activities of modern life are the aim of all our teaching efforts, yet, throughout the Institute we emphasize the studies fundamental to such applied science and stress the importance of a thorough working knowledge of mathematics, chemistry, physics, mechanics, drawings, etc. To these are added, of course, subjects which every intelligent American citizen should have at his, or her, command—namely, English, history, foreign language (at least one) and the fundamentals of economic theory.

Carnegie Institute of Technology is organized as four units, or colleges, namely, Margaret Morrison Carnegie College for Women, College of Fine Arts, College of Industries and College of Engineering. To these is added a fifth faculty which functions as a service faculty in the four colleges named and is charged with direct supervision of but one group of students, the freshmen, who will enter the Colleges of Engineering or Industries. The requirements for admission to Engineering and Industries are identical and those to Arts and Margaret Morrison Carnegie College are slightly different, depending upon the line of work desired but, broadly speaking, a four year high school or other secondary school course is a prerequisite to registration.

The work of the Margaret Morrison Carnegie College might appeal less strongly to the members of the Railway Club than that of our other colleges—yet, I believe you will agree with me that there are many opportunities open to young women who have been carefully trained for careers along the following lines:

General Science—designed to fit students for laboratory positions in chemistry, biology or public health work.

Household Economics—training for teachers of cookery or nutrition; for hospitals or other institutional positions as dietitions, etc., for conducting business enterprises as large scale housekeeping, cafeterias and tea rooms.

Costume Economics—the design, making and selling for the trade; training teachers for elementary and secondary schools and colleges.

Secretarial Studies—preparation for work as office managers and assistants; secretaries for both commercial and institutional lines of work.

Social Work—fitting students for welfare work in schools, industrial works, communities and rural districts; social case work.

Library Work—technical training for library work, in co-operation with the Carnegie Library.

The Margaret Morrison College is yearly attracting more and more young women who desire to fit themselves for useful and active careers either within or outside the home circle.

The College of Fine Arts offers four year courses in Architecture, Painting and Illustration, both commercial and non-commercial; Applied Art, commercial and industrial; Music, including the theory and the use of all kinds of musical instruments; Drama, a professional school of the Drama—training actors, playwrights, technical directors and producers, and Sculpture.

Many of your members have listened to the concerts given by the students of music, or have witnessed the plays put on by the Drama Department in our school theatre. Our students of painting and illustration, of applied art and sculpture have contributed examples of their work to numerous public exhibitions. The College of Fine Arts means much to Pittsburgh and is worthy of the most careful consideration on the part of those of us who wish to see Pittsburgh retain and enhance its reputation as an art center. The work of Architecture has been especially notable and our students have won wide recognition as is shown by the many awards and honorable mentions which they have gained in competition with other architectural schools. Surprise is sometimes expressed that an art school and an engineering school can flourish under the same roof, so to speak. Each has something to learn from the other and while one should be conservative in estimating the amount of this reaction—one on the other—yet I do believe the relationship is beneficial to both. Needless to say, the students of the College of Fine Arts make much use of the wonderful opportunities provided by the Carnegie Institute and are aided in their work through this agency much more than are the students of Engineering and Industries.

Let us consider for a few minutes the work and opportunities offered by the College of Industries. The activities of the students in this branch of the Carnegie Institute of Technology center about the shops—of which there are 21, and they are unexcelled as regards extent and quality of equipment and their adaptability to the purpose for which they are designed. They provide instruction in all lines of work suggested by the titles of the four year courses of instruction as follows:

Building Construction—including sheet-metal work, electrical equipment, heating, ventilation and sanitary equipment.

Machinery Production—power plant and works operation, manufacture and sales.

Printing and Publishing—designed to train men for executive positions in the printing industry.

Industrial Education—teacher training for trade and similar schools.

It is to the facilities of the College of Industries that I would call your attention especially. Co-operation with the industries of the Pittsburgh district is essential if we are to broaden our work along these lines. Our students come largely from our own city. Mr. Carnegie undoubtedly wished to provide first for the education and advancement of the sons and daughters of those employed in local industries. We already attract many of these young men, both to the day and to the night classes, but we have the facilities to go further. You will agree with me that in many lines of business additional training for the workman is desirable. May I illustrate by one example from the railroad business? We have been told by an authority well qualified to judge—that the railroad shops in the district need many well-trained machinists. As a result of the post-war recruiting in this trade many men entered the railway service whose training as machine operators was defective. One estimate places the number of such men at 5,000. Some years ago a railroad official made the statement that it costs the road five thousand dollars ($5,000) to thoroughly train a locomotive engineer. Examples of this nature might easily be multiplied. Through co-operation between the industry and the Institute it would seem that much could be accomplished which would advance the industry, enable the school to widen its field of usefulness, but most important of all—give to the men themselves, young and old, an opportunity to improve their industrial status and to become more intelligent and, therefore, more patriotic citizens. Many opportunities are open to us whereby such co-operation may be made effective, and I would bespeak your careful consideration of this important question.

The fourth and last on our list is the College of Engineering. We offer instruction in Chemical, Civil, Commercial, Electrical, Mechanical, Metallurgical and Mining Engineering. A course in pure science, with options in chemistry or physics, is also provided. These courses of instruction are all four years in length and, as in all our Institute curricula, with one or two exceptions, lead to the bachelor of science degree. We also offer a two-year course in Coal Mining, not leading to a degree but designed to meet the needs of men who have had practical experience in coal mining but lack the advantages afforded by high school training, supplemented by some of the simpler theoretical aspects of coal mining. Our courses are based primarily upon the fundamental subjects already enumerated in this paper, and are designed to train the young men to think—to be able to apply principles to the simpler problems of design, construction or operation with which they will come in contact in the early years of their professional careers. It would be only fair to state that much of our work in the College of Engineering is of the conventional type, such as may be found in many of our best engineering schools and colleges.

But I desire to call your attention a little more at length to one or two points. In 1910 we inaugurated our course called Commercial Engineering and were thus pioneers among engineering schools in this field of work—one which has become popular and important in many of our institutions. Various titles are employed to designate this sort of work, i. e., administrative, executive, industrial, production, etc., but all have in view training young men for the production, management or sales work in the engineering field rather than to be designers and specialists in some one department or line of work. For two years out of the four the studies are much the same as for all other engineering students but in the upper years of the course, the more advanced technical subjects are replaced by work such as accounting and costs, business geography and applied psychology; statistics, selling and advertising, markets and foreign trade; economic production and business management, labor problems, transportation and banking, what a bank is and does as an adjunct to business, large or small.

Transportation, a huge subject in itself, we discuss rather from the engineering and physical aspects than as a matter of economics and rates. We can touch the high spots only and point out to the student some of the probable lines of future development and the new problems to be overcome.

I may illustrate to you one of our ideas of co-operation with industry by a reference to two Advisory Boards which we have organized and which have already demonstrated their value to the Institute and, I trust, to the industries concerned, as well. Soon after the close of the war we invited a group of about 20 men, representative of all phases of the coal business, to meet with us and give advice on matters of policy, recruiting our student body, placing our graduates, suggesting research problems and in many other ways furthering the interests of our Mining Department. So successful has been the work of this Board, through the unselfish efforts of all its members, acting both individually and as a group, that we have recently organized a board to act in a similar capacity for our Metallurgical Department. Already we have been able, through the efforts of this group, to inaugurate a course of lectures on the elementary principles of iron and steel making. Approximately 60 men employed in steel plants in the vicinity are attending these lectures, which are given two nights a week in Tarentum. On each of these boards are representatives of the Pittsburgh station, U. S. Bureau of Mines, and its admirable laboratories and other facilities, as well as the expert advice and guidance of its staff of technical experts, contribute much to the success of our educational program.

Next, a word regarding the part-time classes or night school. More than half of our 4,000 students attend classes in the evening and all our departments offer night courses excepting only the Margaret Morrison Carnegie College for Women, where but few part-time courses are provided. In Industries the evening work is almost wholly vocational in its scope and confined to instruction in the trades. A few courses in general studies supplementing high school instruction are given for the benefit of those men who wish to prepare themselves for more advanced study—particularly for the technical work of the College of Engineering. In the Colleges of Fine Arts and Engineering practically all lines of work offered to day students are available to night students as well. In Engineering alone is it possible for candidates to secure the bachelor's degree by pursuing fixed courses of study in the evening classes. Few men have the courage or opportunity, to say nothing of the actual physical stamina, to continue such a course over the seven or eight years necessary to meet the conditions imposed. Our evening classes afford an opportunity to any young man who desires to improve himself and to increase his earning capacity. The requirements for admission vary with the work desired, ranging from no previous scholastic training in the case of many of the trade or vocational courses up to full high school preparation if a man desires to pursue an engineering course leading to a degree. The evening classes are fast growing in popularity and we may even look forward to the time when extension courses which do not require laboratory or shop facilities will put us in touch with more remote districts than those we now serve.

Time does not permit extended reference to the very important subject of research, but from what I have already said you will realize that our equipment and personnel are such that we are in a position to carry on much of this kind of work, subject only to the limitations of space and money. In some of our departments the use of equipment by the regular students will not permit us to set aside apparatus needed in research work and this restriction, coupled with the lack of funds required to successfully complete an extensive set of tests or experiments serves at present to handicap our progress along many lines. However, the field of research is unlimited and among so many diversified industries as are to be found in the Pittsburgh district, there must be executives and technical experts who are puzzled over the solution of problems which might be cleared up through the instrumentality of our equipment, coupled with the technical training of educational experts.

In order to round out our program of service as a distributing center or clearing house for scientific information, our President, Dr. Thomas S. Baker, has arranged for lectures to be given by men who have distinguished themselves by their scientific achievements. I will mention only Dr. Langmuir and Dr. Millikan, the latter the 1923 winner of the Nobel prize in Physics, and more recently we have listened to Dr. Niels Bohr of Copenhagen, who won the same prize in 1922.

I have given you an extended and, I fear, rather sketchy outline of the work and opportunities available at the Carnegie Institute of Technology. I trust I have at least aroused your curiosity with respect to one or more aspects of our educational program. I repeat, however, what I said at the beginning, namely, that what the Carnegie Institute of Technology means to the railways is not one whit more important than what the railways mean to the Carnegie Institute of Technology. We feel that through co-operation and joint effort we are in a position to be of service to the railways and other interests—both large and small—by sending out young men and women who have been trained to observe and to think. These qualities, coupled with common sense, moral courage and a spirit of service, will enable these young people to contribute much to the interests with which they become connected. We ask your aid and advice, not for ourselves alone, but in behalf of these sons and daughters of today who tomorrow will be our heirs, charged with the duties now resting upon our shoulders, and responsible for the successful carrying forward of those ideals which we all cherish as thoughtful and patriotic American citizens.

Mr. Mott's address was accompanied by motion pictures, showing many activities of the students both in the laboratories and on the playgrounds.

PRESIDENT: We thank you from the bottom of our hearts. We all feel proud to be associated as Pittsburghers with this wonderful institution. I think the invitation Mr. Mott has given us, to know more of a line of work calculated better to equip ourselves, particularly the younger men, for the future, is most worthy of our serious consideration. We accept with the greatest pleasure your invitation—and I am perhaps taking some liberties in this respect, but I feel that the Executive Committee will gladly approve of the plan—to have one of our monthly meetings held at your auditorium.

We will be glad indeed to have any discussion or questions of Mr. Mott's most interesting discourse.

MR. D. J. REDDING: Does the general public know when these lectures you speak of are to be delivered?

MR. W. E. MOTT: We have made announcement in the public press, though it has not been very well featured. We send out notices to various societies and we would be glad to send individual notices.

MR. D. J. REDDING: May I suggest that you send a notice of these lectures to the Secretary of The Railway Club, to be announced in our meetings from time to time.

MR. W. E. MOTT: I thank you for the suggestion. We will do that.

MR. C. O. DAMBACH: These two year courses for men in the coal industry and engineers engaged in the coal industry; it is my understanding that that took care of the other classes of engineering.

MR. W. E. MOTT: Yes. I should add, however, that the two-year students in coal mining are pursuing courses which, in general, are not of college grade. A common, or grade, school education is all we require by way of scholastic preparation, but we do impose the important requirement of two years of actual experience in or about the mines. These men may, in a certain sense, be classed as vocational students whose limited schooling is to be supplemented by additional instruction in elementary mathematics, chemistry, physics, drawing and

English. They are already well versed in ordinary mining methods and operations but this knowledge and skill should be supplemented by courses which will provide a scientific basis for their practical training and give them a better insight into the coal mining business. These students are older men than the average college student—frequently they are married—and for these reasons, as well as for the "ups and downs" in the coal business, it is difficult to keep our classes recruited up to normal size. The group is an interesting one, however, and we intend to continue our experiment, believing that the men who complete this course will prove of great value in the coal mining business. Indeed, it is no longer an experiment. The men whom we have sent out are already well placed, either with their old companies or in new connections.

MR. C. O. DAMBACH: In regard to the corrosion of steel other than in coal mines; in steel plate cars, when they were first used on the railroads people thought they would last 50 years. Everybody knows they are going to pieces pretty rapidly. Have they made any study as to the corrosion of steel freight cars?

MR. W. E. MOTT: Thus far we have undertaken no studies bearing directly upon the corrosion of steel freight cars. However, the tests already made in connection with corrosion due to acid mine waters, especially as to the equipment in mines, would doubtless throw much light upon the behavior of steel plates in coal cars. These corrosion studies are still being carried on in the laboratories of the Bureau of Mines and anyone interested in the results thus far obtained may secure the information by addressing the Superintendent of the Bureau, or Captain Edward Steidle, Department of Metallurgy and Mining, Carnegie Institute of Technology.

MR. A. E. ANDERSON: I have listened in vain all evening for what will appear to be the basis by its absence of a very severe criticism, which is, that with the almost unending list of schools and professors, we have heard nothing of what is of more interest at the present time than all the other schools put together and that is, the Department of Football. Not a word about that. I am much interested in this because at the beginning of the season the papers mentioned the fact that there were three Andersons applying for the football toga. I sent Dr. Baker the clipping and wrote that if he would "bake" these "cookies" to the proper brown, the Tech team would not lose a game. I note that two out of the three are on the team, so that if they win only two-thirds of the games the explanation is clear that they left off one-third of the punch, or they would not have lost a game.

In talking about co-ordination between the Museum and Tech Schools, the other Sunday afternoon, while walking through the Museum, it occurred to me that inasmuch as a touchdown is the most important part of football, Tech is omitting the use of equipment in the Museum and thereby making a great mistake, because they could borrow old Diplodocus, who could make touchdowns clear across the field.

All that aside, I think this is a splendid explanation of those schools. I have taken books out of the Carnegie Library since it was opened, and I once applied with a view of taking a course of study at the beginning, but I never got it arranged I have been interested in it ever since and am very glad to hear this explanation, because it is wonderful in its scope. I would move a vote of thanks to the speaker for his explanation.

(The motion prevailed unanimously by all members rising.)

There being no further business, upon motion the meeting adjourned.

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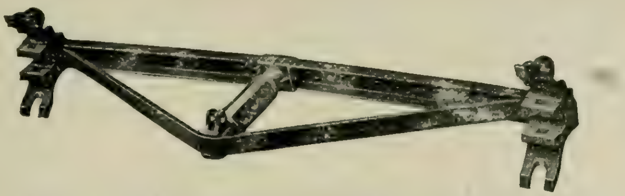

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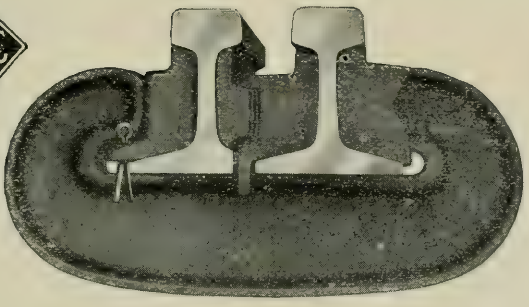

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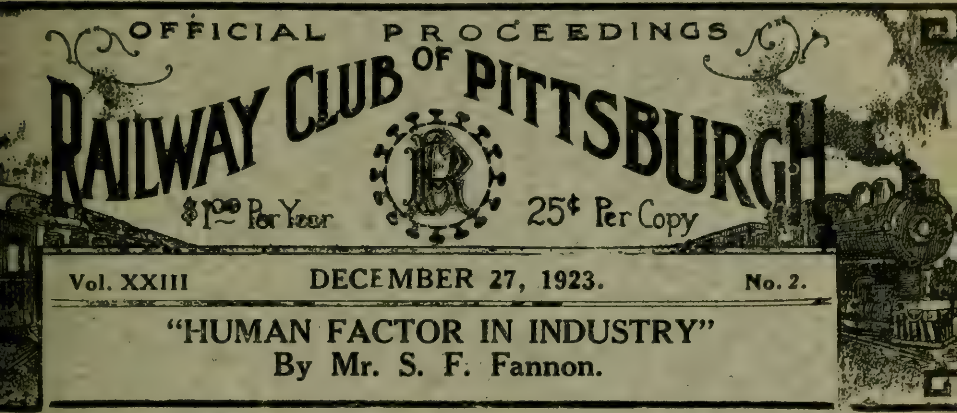

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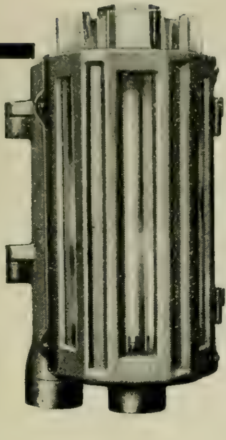

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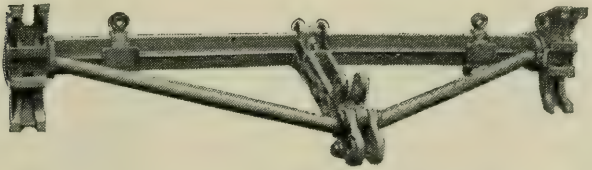

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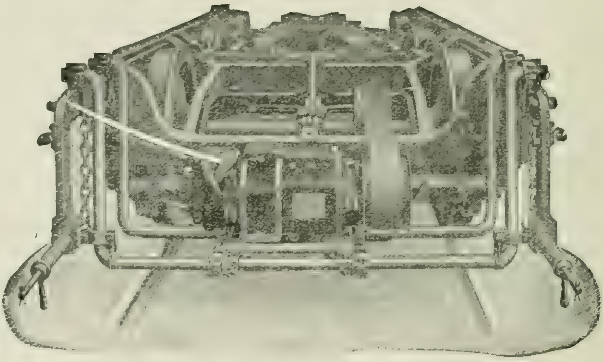

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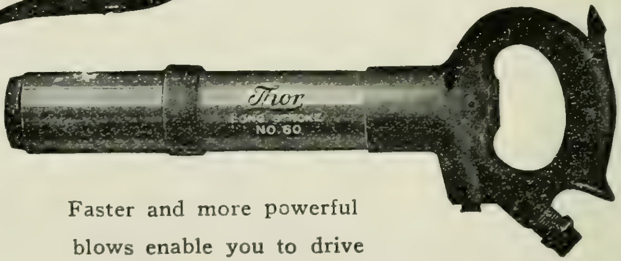

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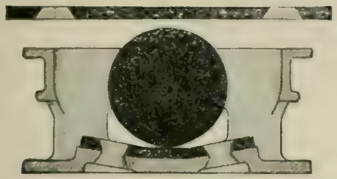

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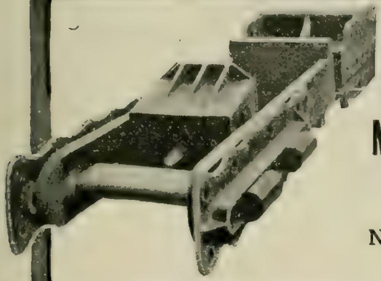

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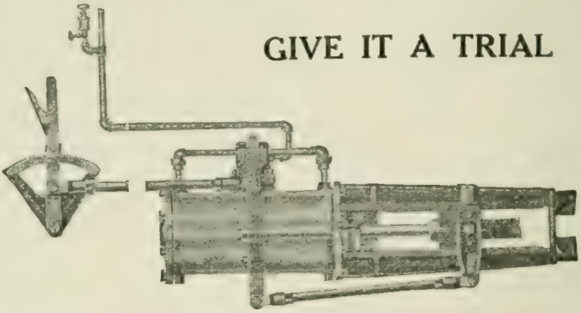

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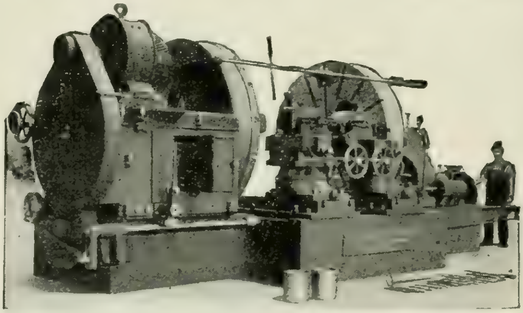

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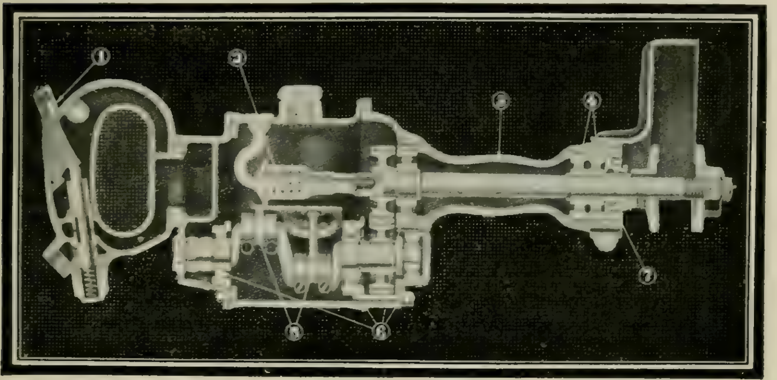

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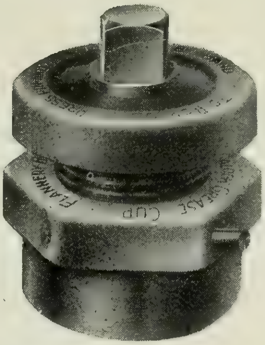

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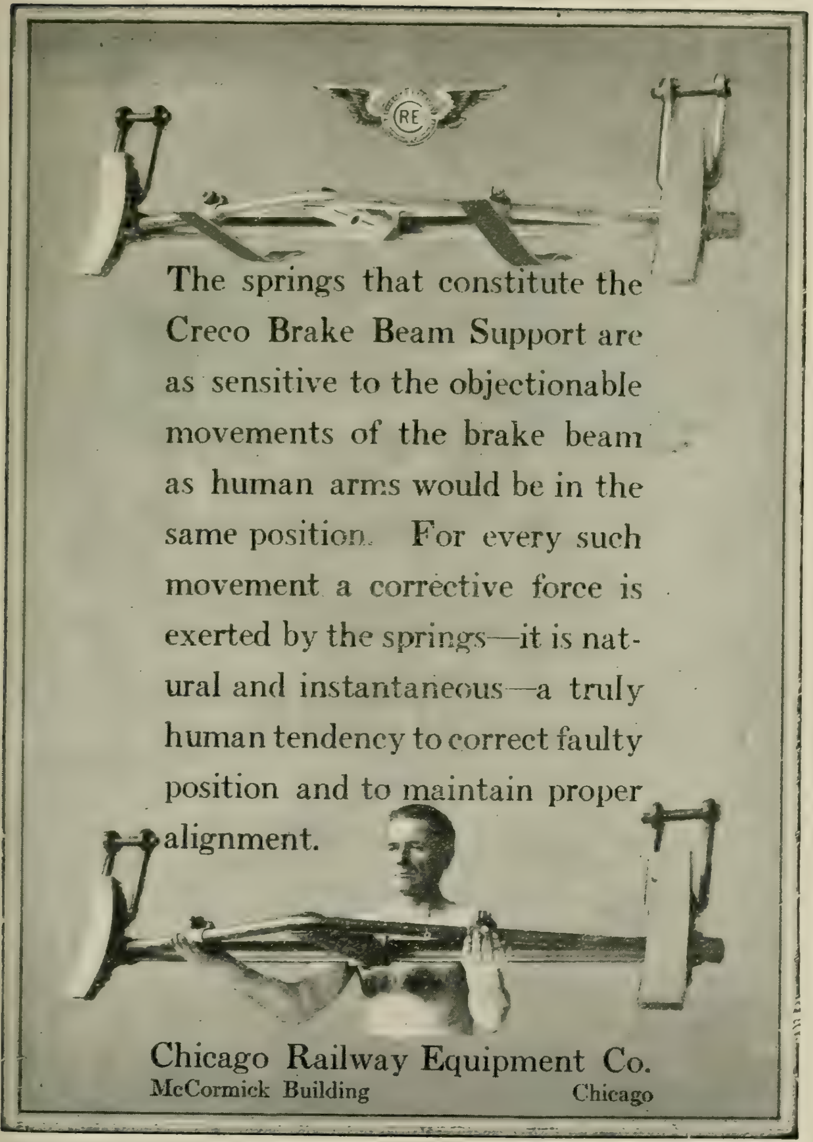

The springs that constitute the Creco Brake Beam Support are as sensitive to the objectionable movements of the brake beam as human arms would be in the same position. For every such movement a corrective force is exerted by the springs—it is natural and instantaneous—a truly human tendency to correct faulty position and to maintain proper alignment.

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OFFICIAL PROCEEDINGS
OF
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Past Presidents

*J. H. McCONNELL	October, 1901, to October, 1903
L. H. TURNER	November, 1903, to October, 1905
F. H. STARK	November, 1905, to October, 1907
*H. W. WATTS	November, 1907, to April, 1908
D. J. REDDING	November, 1908, to October, 1910
F. R. McFEATTERS	November, 1910, to October, 1912
A. G. MITCHELL	November, 1912, to October, 1914
F. M. McNULTY	November, 1914, to October, 1916
J. G. CODE	November, 1916, to October, 1917
D. M. HOWE	November, 1917, to October, 1918
J. A. SPIELMANN	November, 1918, to October, 1919
H. H. MAXFIELD	November, 1919, to October, 1920
FRANK J. LANAHAN	November, 1920, to October, 1921
SAMUEL LYNN	November, 1921, to October, 1922
D. F. CRAWFORD	November, 1922, to October, 1923

*—Deceased.

Meetings held fourth Thursday of each month except June, July and August

PROCEEDINGS OF MEETING

December 27, 1923.

The meeting was called to order at the Fort Pitt Hotel, Pittsburgh, Pa., at 8 o'clock P. M., President George D. Ogden in the chair.

The following gentlemen registered:

MEMBERS

Abel, A. W.
Adams, W. A.
Anderson, A. E.
Anderson, J. W.
Austin, F. S.
Babcock, F. H.
Berg, K.
Blakley, T. M.
Brower, J. E.
Campbell, J. T.
Carpenter, H. D.
Christy, F. X.
Conlon, John F.
Conway, J. D.
Crawford, D. F.
Cunningham, R. J.
Dambach, C. O.
Dudley, J. C.
Emery, E.
Faix, Joseph
Forrest, C. H.
Freshwater, F. H.
Gilg, Henry F.
Glenn, J. H.
Grieve, W. F.
Hale, Chas. E.
Hansen, Wm. C.
Headington, R. V.
Heinlein, Geo. J.
Herlehy, David T., Jr.
Herron, B. J.
Hoffstot, H. P.
Howe, D. M.
Kearney, J. W.
Kegel, Arthur E.
Kelly, Leo J.
Kummer, Jos. H.
Lanahan, Frank J.
Lanahan, J. S.
Laughlin, R. J.
Laurent, G. F.
Lehr, Harry W.
Lent, John F.
Lobez, P. L.
Ludwig, C. L.
Lynn, Samuel
Malcolm, Elmer E.
Millar, C. W.
Moran, J. V.
McConnell, John J. P.
O'Brien, Martin J.
Ogden, Geo. D.
Painter, Joseph
Parker, W. G.
Peoples, J. S.
Read, S. C.
Redding, D. J.
Redding, P. E.
Rhodes, W. H.
Ryan, D. W.
Sattley, E. C.
Schwab, Charles
Severn, A. B.
Shannon, David E.
Smith, J. L.
Stamets, Wm. K.
Stevens, L. V.
Stucki, A.
Sutherland, Lloyd
Taylor, H. G.
Thomas C.
Van Vranken S. E.
Walker, J. W.
Warrensford, Fred S.
Wright, John B.
Young, F. C.

VISITORS

Bayless, Wm.
Blank, Joseph
Fagan, R.
Fannon, S. F.
Hoover, J. W.
Jex, W. S.
Mahan, W. C.
Marrison, R. C.
Milby, T. A.
McLennan, Howard
Plank, L. G.
Schlett, Max
Smith, Sion B.
Snowden, H. J.
Taylor, Jos. M.
Timme, W. F.
Whittingham, D. B.
Woodward, J. E.

The call of the roll was dispensed with, the record of attendance being obtained through the registration cards.

The reading of the minutes of the last meeting was dispensed with as they are to appear in printed form.

The Secretary read the following list of applications for membership:

Budd, Edward T., Construction Inspector, P. & L. E. R. R., P. O. Box 138, Dickerson Run, Pa. Recommended by Samuel Lynn.

Crouse, J. M., Asst. to Pres., P. & W. Va. Ry., Wabash Bldg., Pittsburgh, Pa. Recommended by C. O. Dambach.

Harper, W. C., Storekeeper, P. & L. E. R. R., 1516 Edgewood, Ave., Coraopolis, Pa. Recommended by Samuel Lynn.

Hoover, Jacob W., Chf. Traffic Dispatcher, Carnegie Steel Co., 806 Carnegie Bldg., Pittsburgh, Pa. Recommended by Chas. Orchard.

Livingston, W. C., Storekeeper, Penna. System, Verona Shops, Verona, Pa. Recommended by G. C. Walther.

Manley, W. J., Chf, Traffic Agt., P. & W. Va. Ry., Wabash Bldg., Pittsburgh, Pa. Recommended by C. O. Dambach.

McCuen, J. T., Salesman, Motch & Merryweather Machinery Co., 130 Seventh St., Pittsburgh, Pa. Recommended by E. C. Batchelar.

Pillar, Michael, Construction Insp'r., P. & L. E. R. R., 363 Munsan Ave., McKees Rocks, Pa. Recommended by Samuel Lynn.

Smith, M. A., Asst. S. M. P., P. & L. E. R. R., 720 Second St., Beaver, Pa. Recommended by Samuel Lynn.

Stritzinger, Frank R., P. W. Insp'r., P. & L. E. R. R., 117 Stem St., Wabash Station, Pittsburgh, Pa. Recommended by Samuel Lynn.

Timme, W. F., Special R. R. Rep., Underwood Typewriter Co., 439 Sixth Ave., Pittsburgh, Pa. Recommended by A. W. Abel.

Woodward, J. E., E. H. Foreman, Penna. System, 531 Homewood Ave., Pittsburgh, Pa. Recommended by J. E. Brower.

PRESIDENT: As soon as these applications have been approved by the Executive Committee, the gentlemen will become members upon payment of the year's dues.

Announcement was made of the death of Mr. Stephen C. Mason, Secretary, The McConway & Torley Company, who died December 12, 1923.

PRESIDENT: Appropriate memorial will appear in the Official Proceedings of the Club.

PRESIDENT GEO. D. OGDEN: Fellow Members of the Pittsburgh Railway Club:

At our last monthly meeting, as you may recall, I stated that it was my thought, in accepting the presidency of our club to make each meeting, the occasion for a brief talk upon some subject relating to transportation which might be of interest and importance to our membership generally. The question which I have decided to discuss briefly tonight is a purely practical one of railroad operation. I have selected it largely to illustrate how the efficiency of railroading can be improved by genuine co-operation between carriers and shippers. The matter is one in which I feel a considerable degree of personal pride, because it bears upon certain innovations in freight handling in the Central Region of the Pennsylvania Railroad System which were originated and brought to final development during the period in which I was fortunate enough to be one of your fellow-citizens.

I have reference to the introduction and use of what we term our "loading guides," for the information and assistance of large shippers of less-than-carload freight in trap or ferry cars. The plan has been in operation in the Central Region of the Pennsylvania System for the greater part of three years. It is now a well established institution and has brought, and is bringing, such good results, both to the railroad and its patrons, that I feel a brief consideration of the methods adopted, and what they have accomplished, will be both instructive and interesting.

At the outset, to assist in a clear and definite understanding, it will be well to define the terms "trap" or "ferry" car. These are semi-technical designations which belong to the craft or profession of railroading. As we employ them in connection with the shipping methods used under our loading guide system, they are interchangeable and always mean freight cars which are loaded by shippers at their own plants with miscellaneous less-than-carload freight. Pittsburgh, as the greatest railroad freight center in the world, has an enormous amount of both incoming and outgoing freight, in carload and less than carload lots. The loading guides deal only with the outgoing freight and in quantities of less than carloads.

As you will always recall, the year 1920 started off with general commercial activity all over the nation. The slump in trade, by which the year is better remembered by most people, came toward its close and extended into the following year.

It was during the active period in the first half of the year that the loading guide plan for less-than-carload freight originated. The situation during this period was greatly complicated by the outlaw strikes which occurred, following the termination of Federal control of the railroads. In consequence there was considerable congestion of railroad facilities in all portions of the country.

Here in the General Region, and particularly in the neighborhood of Pittsburgh, the effects were felt with particular keenness. Large accumulations of cars containing less-than-carload freight developed both at originating freight stations and transfers. As an example of the condition, it may be pointed out that in the late spring and early summer of 1920 the number of cars of less-than-carload freight on hand at stations and transfers, both placed and not placed, ranged, in the Central Region, from 2,500 to 3,000 a day, and at one time a peak of 3,700 cars was reached. It was this situation which made it particularly desirable to devise a more orderly and systematic method of handling less-than-carload freight moving from the large shippers.

A study made at that time indicated that a large proportion of the congestion resulted from the great number of ferry cars which were loaded at various industries in the Central Region, and which then had to be re-handled at the nearest public freight stations or primary transfers. Freight stations were not adequately equipped to take care of the great amount of traffic of this character, and, in addition, the volume of the traffic fluctuated so much from day to day that it was extremely difficult to regulate the labor supply at the various stations with any degree of efficiency.

Investigation showed that freight was being loaded in ferry cars altogether indiscriminately. Shipments for eastern points were loaded in the same car with shipments to western points. Shipments to short-haul points were intermingled with shipments for distant points.

This complete lack of system in arranging shipments made it necessary in practically all cases to move the cars either to the nearest public freight station or the nearest primary transfer. At those points the cars would be unloaded, the shipments sorted and reloaded again, usually to a more distant transfer, or in some instances to destination.

The purpose of the loading guide plan was to reduce the amount of rehandling, and, at the same time, lessen the burden upon local station and transfer facilities. This was brought about by placing in the hands of large shippers information which would enable them to arrange their less-than-carload shipments with a view to having the initial haul of the car as long as possible. In other words, the principle to be observed was to load the freight to the most distant points practicable before re-handling for final movement to destination. To state the matter somewhat differently, it was seen that immense relief would be afforded if shippers could be induced to segregate their less-than-carload shipments by destinations or districts, and load their ferry cars so that they could be carried through to destination where that was possible, or where that was not possible, then to the transfer serving the destination. It can be readily seen, of course, that this would result in more simple railroad operations, more expeditious movement, and reduced risks of loss and damage.

It was believed that if the required information was placed in the hands of shippers in simplified and easily intelligible form, they would gladly co-operate with the railroad in improving the service by loading their cars accordingly. I am happy to say that this anticipation has been realized to a most gratifying extent. The mere fact that the plan has worked, and is working successfully, is abundant testimony to the co-operation of shippers, because without such co-operation it would not work at all.

Twenty-four guides were issued covering 180 ferry car shipping points in the Central Region. Each guide embraces 40 pages of loading instructions. It contains an alphabetical list of agency stations on the System. Opposite the name of each station is a number assigned to that station. Loading directions are then given for the various station numbers showing the proper transfers to which less-than-carload freight from any given points of origin should be loaded in order to insure the most expeditious and efficient handling.

In compiling the information for the loading guides, and planning their typographical arrangements, two leading considerations controlled. The first was that, in order to insure that the shippers would actually use the guide, the publication should be put together in the simplest manner possible. The second was that the fullest co-operation could be secured if the guides allowed a reasonable amount of elasticity as to the transfers to which freight should be loaded.

In consequence the guides when published, were issued in the simplest possible form of tabulated arrangement, and were so constructed that they not only showed the transfer which was theoretically most desirable for loading shipments to given destinations, but also showed the first preferred, second preferred and third preferred transfers. Consequently if a shipper did not have sufficient freight to permit the car being loaded to the theoretically most desirable transfer, he could load it to the first preferred transfer, etc.

The plan also made provision for loading ferry cars through direct to destination without going through transfer at all, provided the volume of traffic was sufficiently great to warrant the loading of such cars daily, tri-weekly, semi-weekly or weekly as the case might be. It was felt that where 10,000 pounds or more could be accumulated, loading to through destination would be warranted for distances within a radius of 150 miles; between 150 and 250 miles, 15,000 pounds were specified; and for distances beyond that, 20,000 pounds.

In the first six months of operation under the plan 16,500 ferry cars were forwarded to stations in the Central Region of the Pennsylvania System. More than half of the entire number, to be exact 8,425 cars, were hauled to the theoretically most desirable transfer, or direct to connecting lines, or direct to destination without any intermediate rehandling at all. The remaining 8,093 were, in the great majority of cases loaded to preferred intermediate transfers in conformity with the ferry car guides.

These figures show how readily the industries in this territory appreciated the practical value of the plan and how earnestly they co-operated with the railroad management in making it a success.

Many letters have been received from the officers of large industries in the Region, commending the plan and pointing out the advantages which they have experienced from its use. The manager of one very large plant, constantly making heavy shipments of less-than-carload freight, reported in the first year of working under the plan an improvement of 100% experienced in the promptness of delivery to customers. He also stated that since the plant's shipping platforms had been rearranged to permit loading shipments in conformity with the loading guide for his district, the requests for tracers from customers had been practically eliminated. During the first twelve months the Company's own use of tracers had decreased from 2,000 to less than 500, illustrating thoroughly the greatly reduced liability to error in working under the loading guides.

A study of correspondence with shippers, and observations of the physical improvement of traffic, have indicated that from the viewpoint of shippers four general advantages result from the plan.

1. Shipments reach customers in a shorter length of time than under any plan of indiscriminate loading because the delays at local stations and transfers are eliminated. Even where the shipper has to wait several days, or perhaps a week to accumulate sufficient freight for loading through to a distant transfer or destination, the far greater speed of movement, once the car is started, much more than compensates for the slight initial delay.

2. Owing to the reduced amount of handling in transit, not only do the goods arrive at destination more quickly, but the packages and their contents are in very much better condition. This eliminates to a very large extent the vexation of presenting and proving claims, with consequence of reduced annoy-

ance. Several shippers in the territory have reported that their claims for loss and damage on freight shipped under this plan have become almost nil.

3. The instances of incorrect loading have been very considerably reduced, because the opportunity for errors of this kind are brought down to a minimum. This also has due influence in lessening the difficulties in connection with proving claims, and obviates delays in shipment and friction with customers.

4. The improved service has eliminated to a great extent the necessity for tracing shipments on practically every form of traffic handled under the plan. I have already mentioned a specific statement on this point by one of our most important industries.

From the point of view of the railroad, many advantages also have accrued, some directly benefiting the Company financially, and others relating to betterment in the character of service. The first and most obvious improvement was, of course, an immediate reduction in the number of ferry cars loaded indiscriminately and with total lack of system. Reduced handling at originating freight stations and primary and intermediate transfers has simplified operations all around, tended to speed up movement and eliminate duplication of effort. In the loss and damage field the railroad, of course, shares with the shipper the benefit of reduced injury to goods in transit. The car supply has been improved by reason of the reduction in the time during which ferry cars were in transit or were detained awaiting unloading. Congestion at local freight stations has been greatly relieved, which is particularly important in the case of these stations not having proper facilities for the reclassification of less-than-carload freight, but nevertheless called upon frequently to perform such work for industries in their neighborhood.

The entire success of the plan, as has been indicated several times, depended, and continues to depend, upon the willing and hearty co-operation of shippers. Their response was immediate at the start and has been fully maintained ever since. In consequence the results achieved under the plan have very much exceeded the expectations of our management at the time it was inaugurated.

The loading guides were put in use on March 15, 1921. The year 1922 is, therefore, the only full year during which the plan was in operation. In that year 9,400 ferry cars originating in the Central Region were loaded, in accordance with the instructions contained in the guide, straight through to destination without any transfer at all enroute, and 13,100 others cars were loaded to the proper distant transfers or connecting lines, making a total of 22,500 cars handled correctly in accordance with the plan. It would be impossible to estimate the actual money saving involved both to shippers and to the Railroad Company, resulting from the greater efficiency in the handling of this large number of cars, but it is perfectly safe to say that it would represent a very large sum. The records for the current year, as far as present indications point, will reflect at least an equally satisfactory performance, and probably will show even more favorable results.

The reduced burden upon local freight stations, resultiing from the plan, has been one of its most important features. Even during the heaviest shipping season of the present year, when all traffic records for all time were broken, the number of cars containing less-than-carload freight requiring handling at stations and transfers in the Central Region, averaged only from 1,000 to 1,200 per day, as against an average of 2,500 to 3,000 daily, with peaks of nearly 4,000, which were experienced in 1920, and which would certainly have exceeded in the present year, had the old indiscriminate methods of loading prevailed.

Altogether, we are more than satisfied with what has been achieved under the plan and believe that it is well worthy of careful study and consideration, not only as a successful experiment in improved railroad operation, but as an impressive object lesson in the practical good results of willing co-operation.

PRESIDENT: We have with us tonight Mr. S. F. Fannon, Director Department of Public Service, Sherman Service, Inc., of Boston, whose enrgies are devoted to industrial co-ordination. Mr. Fannon comes to us with a very important and interesting message. It gives me great pleasure to introduce to you Mr. Fannon of Boston.

"Human Factor In Industry"

By Mr. S. F. Fannon.

Up until just a few weeks ago I felt quite confident of myself whatever might be the meeting, but in Florida I had that confidence all swept from under me. A colored gentleman was watching me for a few moments down there one day and when he broke into a smile and said, "Zin't you the fellow what has been talking to the Chamber of Commerce down here in Florida?" I said I thought so, and he said, "You look like your picture. My name is Jackson. I am the Pastor of the Colored Baptist Church. I would like to know if us niggers couldn't get you to come down to talk to us some Sunday night." I said, "Wait a minute. I am not a minister and if I were to come down to your church I would be likely to get everything mixed up about religious views and spoil the service." He said, "Lord, man, you ain't got the right slant on us. Us niggers don't care what you say. The main idea is to give this nigger a rest."

I said, "Of course, if it would give you a rest I will come down. I'll tell you what I will do. I will come down in about a week provided you let me visit your church next Sunday night." He agreed and I went and occupied a seat in the rear of the church. The old darkey was about ready to commence services when he happened to notice me and he laid down his song book, squared his shoulders and said: "Now, brethren, stop rolling around in them seats like you had no religion at all. I and the good Lord know you ain't got no religion. But we got company here tonight. You don't want the company to know that you ain't got no religion. The man what's coming to speak to you next Sunday night has come down here tonight for just one purpose, and that purpose am to get enthusiasm for what he is going to say to you. But the way you are acting you ain't going to hear nothing; pep up, get ahold of your song books, turn to page 163 and sing the praises of the Lord out good and strong." Quite naturally the congregation turned around to see if they could locate the visitor, and then the old darky preacher in trying to help them out, scratched his kinky head, looked in my direction and said, "Mr. Fannon, I am going to have to ask you to stand up so that we can tell you from the rest of the niggers present."

But I am sure that it is a pleasure for me to be here this evening and have just a part on your program. You have realized and learned long ago the value of good will. You have learned what it means to tie a customer to you through your sunshiny smile, through turning an attentive and listening ear to their troubles, through sympathy with them, and on account of this, the concerns you represent have increased their business to a great extent. And yet men, with all the lessons we have had, with all that we are learning about good will, I wonder how many of us have ever stopped to realize just what we are suffering in this country because of the lack of application of good will in another line—not towards our customers, but towards the employe whose hand and brain makes possible production in quality and quantity. Do you realize that because we have failed to develop, as industries all over this country, a feeling of good will between employer and employe, that we are losing 25 per cent of every dollar that we are investing in the pay envelope, that industry is putting $1.00 in the pay envelope from which it is receiving but 75 cents in return today? A 75-cent dollar in business. What a stupendous loss—a loss which at once creates an economic waste, that cannot help but affect employer and employe, in fact, the entire country.

Let us consider for a moment or two the various major factors found in industry. Take machinery. We have ever spent a large amount of time and money upon machinery, that from it we might receive the maximum return for every dollar invested. We have kept our investors busy applying their genius toward the development of this factor, that we might secure a higher production and the largest possible return on every dollar invested in machinery.

Day and night we are working upon the problem of raw materials. We have created our own research departments that we might locate sources from which we might secure a constant supply of the proper qualities, and thus eliminate all losses in raw materials.

There is hardly a newspaper or periodical published today that does not contain an article on management. Highly developed courses on management are to be found in the curriculum of our larger universities. We are putting forth every possible effort in order that there may be no loss in the dollar invested in management.

The same may be said of merchandise and markets. The matters of style, the elements of fashion, the question of seasonable goods, the various channels of distribution, and numerous other related phases are all under continual scrutiny, not only by individual manufacturers, but also by associations of manufacturers in practically all lines today. We are maintaining experimental laboratories for the purpose of maintaining quality, decreasing cost and developing new and additional uses of products, that we might secure the maximum return for the dollar invested in merchandise and markets.

But when we come to the dollar invested in the human factor, we find quite a different story. It does not seem possible that men who have shown such intelligence and foresight in handling the dollars invested in these other factors, would fail in many instances to provide against a loss in the dollar invested in men. There are a few employers who give intelligent and sympathetic consideration to the viewpoint of the workers. These employers are receiving a larger return for the money invested. Nevertheless, the truth remains that we are almost universally neglecting the dollar invested in the payroll envelope.

Are we to admit that cash invested in plant and equipment exerts a more powerful appeal to the executive than cash invested in payroll? Is it possible that a machine made of iron and steel is more attractive to the executive than a machine made of flesh and blood? But man-power is vitally essential to machine-power and to the profitable operation of any industry. All factors found in industry and business depend upon the loyal support, intelligent co-operation, and harmonious production of the human element.

Nevertheless, mechanical factors commonly receive 95 per cent of the executive's consideration, and the crumbs of 5 per cent are thrown to the human factor. In many plants at this moment engineering specialists are engaged in studying and improving conditions of equipment and process. This is as it should be—executive appreciation of science in machinery and processing adds to profit. But in how many plants will you find management sufficiently enlightened to realize that science in the human factor pays large dividends?

Why is it? Why is it that we are paying 95 per cent attention to plant and equipment and only 5 per cent to men? One man said to me, "Mr. Fannon, I'll tell you why. You know America is thinking of dollars, and quite naturally we think of our largest investment and our largest investment is in plant and equipment." Now that is a fallacy. Our largest investment is not in plant and equipment.

A short time ago, in visiting the president of a manufacturing plant, he said to me, "This represents our largest investment. We have four million dollars in this plant." I said, "Is that so, your largest investment?" He said, "Yes, sir." I said, "Let us look at this for a moment or two. How many employes have you?" "Four thousand." "What is the average pay of these employes?" "Well, about $20 a week." "Well, if that is true, every two and one-half years, sir, you are paying out in the payroll envelope an amount equal to that you have invested in plant and equipment."

In the average business cash invested in payroll will exceed cash invested in plant and equipment within two or three years, even in the most unusual enterprises payroll investment will exceed plant investment within five years.

Take for example your own plant and figure mentally its cost as compared to your annual payroll and you will find that there is not much difference between the two—the amortization of your plant is probably on a 20-year basis, your payroll is paid every year.

And yet, how we safeguard the investment in plant and equipment. Why, we don't let the night go by without having it covered by insurance. How many times has this happened when the insurance has elapsed and we have spent the night thinking about other things when all of a sudden the whistle blows and the bell rings, and the owner of that plant, without stopping to dress, dashes madly down the street, breaking all traffic laws, to his plant, and then he comes out, wiping the perspiration from his forehead, and says to his wife, "I'll tell you one thing, I am not going through another night like this, I am going to see that this old plant is equipped with insurance that will protect me."

But how many plants today have a protection on the larger investment, that of the payroll envelope? Necessary? Absolutely! Our industrial fire losses average two hundred million yearly—strife losses equal two billion dollars, a risk and waste ten times as great as that of fire.

It was but a year or so ago that I had the pleasure of going to Detroit and meeting with a company of men who were to celebrate a large contract they had just received. What a celebration—they danced around like kids, laughing and crying, telling of the struggle they had put forth for six or eight years that they might put their business on a paying basis. How their wives had sacrificed with them, and now that they had secured this contract, their little wives would have many of the things they had longed for. Their children could be educated according to their dreams. It was one of those celebrations that you love to be in.

It took me about 15 weeks to go from Detroit through the Southern district and back to New York, and when I stepped off the Pullman the New York Times had in head lines the story of a strike at that plant. In three weeks there was a cancellation of the contract. Why? Service could not be rendered. Was it because the management had not built a correct plant? Oh, no, it was a splendid plant. Was it because they had not secured proper machinery? No, sir, they had the highest class of machinery that money or brain could produce. Was their management inferior? No, the management was on a par with other industries. They had overlooked the prime factor—the human element.

We have been able to step up before the banker and say to him, "Here is a contract I have just received, sir, and I want you to look over it. We would like to have about one hundred or one hundred fifty thousand dollars to help put this contract across. You know what we are doing in this community. We are spending a lot of money here, we are bringing in a lot of men," and the banker would look it over and smiling reach down into his desk and secure a long list of questions that had to be answered, and when we had answered these questions and attached to them the insurance policy of the plant, and possibly our life policy, too, we have turned it in to the banker, and provided we were in good standing, we would receive the loan. But tomorrow we have something more to do.

Why? There is a new consciousness arising in the hearts and minds of the financial men of today. They are beginning to realize as never before that every dollar that comes in from the community must be safeguarded to the utmost. They are the trusted in whose hands thousands have placed their life's savings, and as such, must use every precaution against losses.

Thus in the future, when we ask for loans we need not be surprised when the banker asks us, in addition to the usual queries, "What guarantee can you give that your employes will co-operate in carrying out this contract?" And if we cannot point to some adequate method of developing co-operation and loyal support of our employes, we cannot expect the loan to be granted.

We find that the conditions which lead up to the present aggravated situation in industry have been the result of the development of industry itself rather than any actual desire or intent on the part of the employers to neglect their employes. Going back to the beginning of industry, we see the employer rolling up his sleeves, doffing his apron, and taking his place among his employes at the forge or bench. This close contact with his employes gave him a great opportunity to develop personal friendship, give personal supervision, and furnish a good example of faithful work. Production was at its maximum in quality and quantity, so far as the primitive equipment and machinery permitted, for loyalty and co-operation ruled. As the population of our country increased, so increased the demands of industry. And with this change came the new and varied problems of buying, selling, transportation, and finally competition.

And so it happened, that instead of the former close contact and friendly relationship between employer and employe, the day came when the employer left his employes in the workroom and went away to live in an office up in front of the factory where he spent his days, and, unknown to the employes, many of his nights as well, in the strenuous duties of handling the increasing problems of his growing business.

But the workroom could not run itself. At this point the manager made his appearance in industry. The function of the manager was at first to work side by side with the employe, just as the owner had done, but in a rapidly growing country the growth of industry was also rapid, and very soon the manager stopped working in the workroom and he, too, went away to live in an office just as the owner had done before him. The employes in the workroom were now under an assistant manager and later on they were under a superintendent, who had under him minor executives known as foremen, supervisors, or overseers.

About this time the working classes began to realize that in union there is strength, and wishing to better their conditions, they brought into existence the Trade Union. In looking back over the past, we must admit that these unions have accomplished much good for the working classes.

Furthermore, the World War, which was the mightiest struggle of all history, was fought for the basic object of determining whether mankind would lead a hampered and restricted life under the iron rule of autocratic government, or enjoy a free life under democratic forms of government.

It was natural that the mental condition which questioned relations between citizens and government also caused millions of men and women in industry to question the relations between employer and employe, in fact, to question the whole basis and structure of industry.

These events, like a plow and harrow moving over a field, have disturbed the minds of our employes, agitating them and developing a discontentment, but leaving a fertile field for sowing. But has the employer grasped the opportunity? Men, he has done what so many Americans are likely to do, that which I call America's greatest sin, he just neglected it. He let that field, plowed, harrowed and torn—the mind of the employe—go without a seeding.

Neglectful employers produce neglectful employes. For years the employer has neglected to educate the employe through various means at his disposal as to the facts about his business, its troubles and problems. He fails to tell him the advantages of working in his plant, its opportunities and responsibilities. I don't mean that he need go around and talk to them of his business or gather them around him for like purpose. But it is necessary to provide facts regarding his town, its institutions, the desirability of living there, and raising his family there. In short, management fails to recognize that the viewpoint of the employe is the most neglected asset in industry.

The result has been that the employe regards himself ignored and neglected by his employer. And, while the economic neglect may hurt and cut deeply into the feelings of the worker, it is the human neglect which hurts the most. A great many employers still imagine that the question involved in labor unrest is purely an economic question; that is, "one of wages in dollars and cents." But those who have looked into this matter deeply have found that the problem is not so simple, and that it also involves the social element, not the element of humane treatment, but that of simple human consideration. Studying the mind of the employe who is dissatisfied with his employment you will find that he feels little or no loyalty to the business, or to the management who personifies it. Why? Because no one has made any effort to give him the facts about the business and its problems. He understands little or nothing concerning the management's work in relation to production, or the management's pay. Why? Because no one has explained these things to him.

He is envious of management's apparent freedom in going to and from work while he must labor by the time clock. He is told of the management's working quarters, with its carpeted floors and mahogany desks, while he must labor over some greasy machine. Time and again he has mentally compared the homes of the management with his own, and because no one has taken the time to explain the economic reasons for these differences, he soon loses his respect for management, dislikes his employment, and, as a result, shirks on the job, loses some of his personal dignity and self-respect.

But this fertile field has not been entirely neglected. There is a mighty sales force—a company of men that realizes the value of this fertile field. That suave company of radicals who sow seeds of false principles, sinister ideas and class hatreds. They are saying, "That is the field, that is the place to sow. Do away with the bomb, the knife and get down there in the field that is so filled with discontent, and sow our propaganda." Twenty-five thousand men sent out by the radicals to advocate and preach the very principles that undermine our great country, its Constitution, and its liberty. Five hundred and twenty-four periodicals and journals are placed every month in that fertile field.

And with nothing but neglect from the employer, do you wonder that the employe listens, understands, believes and follows such leadership with confidence? To him it is a means to an end, the removal of those whom he believes neither respects him nor his labor, namely, capital and management.

The lack of sound and constructive human relationship in industry has caused fully as much trouble as lack of the proper economical conditions in terms of dollars and cents, for it is a fundamental fact that the state of a workman's mind, much more than the state of his purse, determines his acts.

Many employes say, "Mr. Fannon, I can answer the whole problem. If we will just reach down into our jeans and get a little more money and put it in the pay envelopes that will answer it." This is plainly unsound because thousands of workmen who are getting a larger day's pay are delivering from 25 to 50 per cent less than a full day's work. Take the building trades for instance; a bricklayer at present gets $12 per day and lays 400 bricks, while less than a decade ago he received $4 per day and laid 1,200 bricks. I only cite the bricklayers because that industry has received much public notice, but employes engaged in manufacturing have frequently reacted to increases in much the same way. At one plant, by actual test, we found the productivity of the workers to be 32 per cent of reasonable capacity. An almost unbelievable condition, but for the proven fact—and beyond the wildest imagination of the management of that plant.

I just came from a plant yesterday where they said, "We can answer that for you, Mr. Fannon. If you have your employment department select the employes with more care, just get the skilled laborer, that is the thing that counts." Why, men, I could take you to thousands of our most skilled employes, and I will show you time and time again the man who is producing but 50 to 75 per cent of what he could do.

Well, what is it? I will tell you what it is that controls the employe. You can inquire of your lawyer and he will tell you that when a crime is committed the first thing the law looks for is the motive. The motive is the controlling factor. But aside from acts governed by law, the existence and power of motives has been little understood.

In industry, the motives of workmen exert a tremendous influence for or against productive effort, and are thus the root of vast losses on payroll investment. And yet employers pay little or no attention to the motives of employes.

In various plants considerable attention is given to motion-study, but not to motive-study, although the motions of the workmen are controlled by his motives.

We have established the fact that every working force is made up of three types of employes, irrespective of size of plant, kind of product, open or closed shop, or any other condition. Not three types of employes by sex, creed, vocation or rate of pay. But three types as regards motives: Conservative, Radical and Neutral.

The proportions vary somewhat from one plant to another, but Sherman Service has established through their analysis that in 100 typical employes, 10 per cent are of Conservative motive, 10 per cent of Radical Motive, and 80 per cent of Neutral Motive.

The 10 employes of Conservative Motive produce a full day's work. There is no loss on their payroll dollar.

But the 10 employes of Radical Motive produce only 50 per cent of a full day's work. There is a loss of 50 per cent on their payroll dollar.

And the 80 employes of Neutral Motive produce only 75 per cent of a full day's work. There is a loss of 25 per cent on their payroll dollar.

The net result in this case, which is typical, is a loss in productive value of 25 per cent of payroll investment per hundred employes.

An employe of Conservative Motive is a 100 per cent producer for the reason that he believes that it pays to apply himself loyally and diligently, and to give his employer as much as possible. His daily production reflects contentment, co-operation and active Interest-in-the-job.

An employe of Radical Motive is a 50 per cent producer for the reason that he believes it pays to restrict his efforts and to give the employer as little as possible. His daily production reflects discontent, antagonism and extremely active Hatred-of-the-job.

An employe of Neutral Motive is a 75 per cent producer for the reason that he believes it pays to produce just enough to hold his job. His daily production reflects indifference, non-initiative and lack of Interest-in-the-job.

Thus we have a loss of 25 per cent in production due to Motive. Correct this motive and we will have a product of higher quality at a smaller price, and you men must realize what this means in the competitive markets you have to meet today.

Just consider for a moment or two the cash value of these various motives. Take these 100 men at $4 per day and we are putting in the payroll envelope each year $120,000, out of which, as we have just seen, we are losing $30,000. A manager of a big plant once said to me, "If that is so, I would get fired." I said, "The only reason you are not fired is because the directors don't know it. They never stopped to realize it." Twenty-five per cent loss in the payroll isn't very much after all, that is, it isn't very hard to lose. You know that is only 12 cents an hour on a $4 wage. And don't forget this, there is an octupus with nine great arms reaching out after that—absenteeism, labor turnover, waste of time, waste of material, waste of tools, spoilage of machinery, waste of supervision, under-production in quality and quantity.

Industrial unrest is not a temporary condition which is apt to blow over in a little while. A fire in a building does not put itself out. Don't get the impression that all is well in your business just because the surface is calm. There is not much difference between passive good will and antagonism. Passive good will yields but 75 per cent of reasonable productiveness. What you need is active good will and it can be had.

It is not the employes' fault that they now hold unsound or unfavorable views of their employer. The plain truth is that it is largely management's fault, because they do not apply constructive education and construction contact for them. The average employe is inherently honest in his or her beliefs on industrial problems. If your employes bear unsound beliefs, it is not wholly their fault. If they feel a greater degree of confidence toward agitators and malcontents than toward you as an employer, the answer is that these leaders have been on the job and have earned and secured their confidence, while the employer has laid down on the job and ignored his golden opportunity.

Don't bolster up on the belief that legislation may hold the cure for your industrial problems. There may be some desirable legislation to be achieved, but the co-operation of your employes is of vital importance in securing the enactment of any constructive legislation, as well as in the elimination of any unsound legislation now in existence.

Your problems cannot be wholly solved through so-called welfare activities. I have had the pleasure of being head of one of the best known, if not the largest, welfare work in the world. When I became head of this welfare work I wrote home and told my folks about it. I said I was going to answer the problem between employer and employe, and that I would give to them all the credit. Well, that Irish preacher dad of mine had been carrying a red pencil for years. I never saw him use it, but he did this time. With that red pencil he wrote across the face of my letter "p-s-h-a-w" and under scored it, and then mailed back my letter. Now, that set me to thinking, and those thoughts led me to the decision that it is a mighty poor time to give a fellow anything when you are having trouble with him. We must not confound humane treatment with human consideration.

You are asking, "Is there a remedy, and if so, of what does it consist?" I believe that all we have to do today is to awaken the American public to a full realization of a condition, drive it home, and we will always find an answer to it. We will work our way out of the blackest of storms into the clearest of sunshine. And so it has been with the question we are discussing today. We have found a remedy, and that remedy is education. And while it seems a simple word, it is not as simple in its application as it seems to you at this time. I don't mean by education that you are to put seats in a certain room of your factory and then call in your employes and give them certain lessons like in the primary classes. Oh, no! Not an education that comes from the executive down, but an education that comes from the men to men in their own language, the very kind of an education that you give the customer when you send out advertisements. If your house sends out an advertisemnt and you find it is not doing any good because it is either going over or under the heads of the people you want to sell, you correct it. You had to put it on the customers' level, and that is the way that education must be applied to the employe.

One gentleman, at a recent meeting, asked me, "What good will constructive education do in my business, which is thoroughly unionized?" and since a similar thought may be in the minds of some of you here, I will give the same answer.

By proper education of the rank and file it will select and influence conservative leadership and function in a manner conducive to the ultimate best interests of all concerned.

Surely if radical influence can bring about outlaw strikes in such strongly unionized industries as the coal field of Pennsylvania, the shoe manufactuer of Brockton and the newspapers of New York, constructive influence can bring about conservative action—not alone in controversial matters, but in their every day relationship. Indolence, insubordination and restricted production are all but results of incorrect understanding.

As a result of 13 years' of practical experience in industrial co-ordination, we have learned that in the solution of this problem everything depends upon the sincerity and spirit with which you approach it. The method of education is no less important.

Bear in mind that there has already developed a gulf between management and employe and any outward move by management would likely be viewed with suspicion and distrust. Some one would raise the cry, "What's up the boss' sleeve? What's he trying to put over on us now?" Again any stereotyped method of education cannot wholly accomplish the purpose, since it fails to deal with existing pertinent factors, and if the message should be paradoxial with the grievous existing conditions, it is likely to do much harm.

Finally, any direct means "handed down" by management cannot prove effective until the barrier of mistrust now existing has been torn down and a constructive foundation of common understanding, sympathy and appreciation has been built up in its stead. For it is a scientific fact that the same causes will produce the same results.

The remedy, nevertheless, as I have stated before, lies in education, but in order that this may be intelligently applied, there must first be a correct understanding by management of the viewpoint of the employe as to the working conditions, wages, supervision, facilities and environment. This analysis can be made without in any way disturbing the policy of administration, but skillful procedure is necessary in order that this viewpoint will be free of bias and prejudice.

Second, such conditions as are found to exist which present cause for real grievance and which are correctable should be removed. Third, a systematic, well prepared organized campaign of education should be launched, based on careful study, dealing with the advantages of our form of government over that of soviet or socialistc rule—teaching the employe a correct understanding of simple economics so that he may appreciate the many beneficial opportunities afforded him.

The employe could and should be made to understand why the pyramiding of wages without a consistent increase in production is fundamentally unsound and must ultimately react to his own disadvantage, since labor consumes from 80 to 85 per cent of all that is produced.

Your workers can be made to realize that it is the purchase power of the dollar, not the dollar itself, that is the determining factor of their gain. And of equal importance, they could and should be acquainted with the many advantages of "Stick-to-it-iveness" on the job--of the particularly favorable and attractive conditions of the plant in which they are employed, and especially of how it will benefit them most if they will serve their employer best and give him their maximum co-operation. They should be disillusioned from such fancied grievances as they may bear—and their negative thoughts should be supplanted by sound understanding of the rebounding gains to them by observance of fundamentals of good will.

If the workmen can be influenced to actions which react to their own loss and disadvantage, then it stands to reason that by square dealing and correct teaching, they can be molded constructively

By fostering co-operation rather than competition between management and wage earner, a real worth while, work-together spirit can be established with substantial gains to both the employer and the employe.

In closing let me ask, "What is our big job in this old world?" Have we not been given the positions that we hold today that we might build and develop it into a better world? He gave to you and me our positions, whatever they might be, because He felt that in that position we could touch and build the men, greater and mightier even than He, because we had larger opportunities. Pardon me if I tell a little story.

My dad is still alive. He is a six footer. A preacher out there in the central part of Illinois. There has never been 15 minutes in my life that dad has ever deserted me. If I am anything in the world in the future dad is going to receive the credit for it, for mother had to go up early in life. I had the pleasure of playing on a football team. Playing on that team was a half-breed Indian. He stood six foot two, weighed 180 pounds with not an ounce of fat. I used to love to see him double up and dive through the line for I knew in just a minute or two fellows would be picking themselves up holding a battered eye or rubbing a cracked chin and saying, "Where'd he go and how much did he gain?" I can see that old game today as though it were but yesterday. It was one of those sunshiny days with just enough frost in the air to sharpen one's energies and put a keen edge on your nerves. It seemed to me that they had reached up into the sky, got ahold of the rainbow and scattered the colors pell mell, for there was red, white, blue, pink and green in jacket and sweater, cap and gown, and everyone was yelling for the team they wanted to win. We had been playing until the game was within 10 minutes of the close when out from under the pile of players came our hero, the half breed. His hand was on his right side, his face was white, as he stepped up to the captain and said, "Sheff, they have broken a couple of my ribs and I can't get my wind. That's the reason they've been catching me for the last 10 minutes. There isn't a fellow on that team could hold me if I could get my wind. I'm not yellow, and I don't want to be moved out of the game, put me up into the lines where I can use my good side and shoulder and I'll show you the fight of my life. But if we're going to win this game, some fellow must take my place at full who has wind and speed."

I can see the old captain, high forehead, prominent nose and broad jaw. He had the strange habit of poking it all together till at times he looked like a bulldog in the face. One eye was a little heavier than the other. He generally stood with his shoulders stooped a little forward and with his hands deep in his pockets. That bad eye commenced to run back and forth over the line until it fell on me at right end and then he cried out, "Irish, come here. Chief has a couple of his ribs broken and I want you to take his place. He will play guard. Take the ball, hurdle chief and then down the field, and if you ever had a record for speed, now is the time to show it." Then he straightened up to his full height and pointed to the colors, maroon and old gold. I noticed that his hand trembled and a tear formed in his eye as he said, "See those old colors? They've got to stay at the top of that old pole. We don't dare lose, but we're up against it today—we're playing against a bunch of giants—they know the game from A to Z and they're playing like demons. We don't dare to go home without this game when the people have backed us the way they have. We've just got to win. Look up there! Don't you see, we have just 10 minutes more to play and the score is 6 to 6. We've got the whole field to cover and if we fail to make it in our downs, they have but 10 yards. They'll break the tie and win the game."

And then he seemed to realize that instead of encouraging me, he was discouraging me. He fell back into the old bulldog position, connected me with his foot and said, "Get in line." I took the new position that had just been handed me. I took a look towards the bleachers of the enemy and it seemed to me like a mighty volcano had exploded. Men and women had sprung to their feet and were throwing their hats and caps into the air. They were pounding each other with pennant staffs, canes and unbrellas. The women were screaming in falsettos and the men barking in basso profundos, and I wondered why. And then it dawned upon me, the Chief, our hero, the one they were afraid of, was injured, and I, the midget of the team, was to take his place. Now they would win and the realization of this struck down deep into my heart. Oh, why wasn't I a giant? I took a moment's glance toward the home bleachers for encouragement, but I saw the home people picking up their overcoats and canes and filing out of the bleachers. And I knew that they, too, felt the game was over. I started to turn to the captain to tell him that I would not carry on, when all of a sudden the signals came, "9, 47, 36, 5 and 13," 13—that was me. I believe with the niggers there is something wrong with 13. Those signals had hardly died out when a voice came to me from the home bleachers, a voice that I had heard for over 20 years, "Son, son, down close to the ground. Dad's counting on you," and then I thought, "That's that preacher dad of mine. Oh, gee, dad, I wish that you were here in my place with your six feet and your two ten, wouldn't you scatter them? But no, dad, you're a preacher and you'd have to stop and turn your other cheek before you could get started. No, dad, you couldn't do it, there is a great row of policy to keep you back." The signals came again and with those signals came father's voice, "Son, son, down close to the ground, dig your toes in good and deep, you can do it. Sic 'em," and that "sic 'em" was like the turning on of 33,000 volts of electricity. It hardened my muscles, it steadied my nerves, cleared my eyes. I found myself on my knees, fairly begging for that old ball. Dad, who knew me better than anyone else in all the world, had said I could do it. I saw the ball leave center, come to quarter, and then it seemed like a century till I could get hold of it. I finally clasped it to my bosom, and holding it there like some precious stone, I started my hurdle over the old Indian, taking but a moment's glance to the right to let dad know I was going to do my best. Oh, what I saw in that one glance! Dad's white hair was flying in the breeze, his right ministerial fist had struck out, a policeman's helmet was suspended in mid air, his left was getting busy, and I knew that preacher dad of mine, who had always preached peace, was now practicing something else. Men, I tell you I wanted to stop to see that fight, but I had something else to do. I had to weave the grass of that field into a carpet, beat the dust out of that carpet and throw it back into the eyes of the fellows that were coming. I had to reach two posts away down the field, but something seemed wrong. The world was turning against me. I had lost my feet. I was running on my ankles. And then my lungs commenced to fail me—one seemed to stop entirely, and then I noted that the ground was closer and to my surprise I found I had thrown away my legs and was running on just the stubs. Things began to pale before me and look gray. I saw a white line. I stumbled and fell and everything went black. Out of that blackness something drew me to a standing position and when I opened my eyes there stood my father. His face was covered with perspiration, a little blood was running from one nostril, his collar was gone and his necktie was around in the back. The tail of his Prince Albert coat was missing, but he was laughing and crying at the same time. Holding me in one arm and reaching for the captain with the other, he cried, "That's my kid, that's my kid! That's the kind of kids I'm raising!" The papers came out and said, "Fannon wins the game!" I was glad they said Fannon for if they had said "S. F. Fannon" they would have meant me. I didn't win the game, it was dad who won the game, for he cheered me on and gave me encouragement at the time when I most needed it.

There is not a man here tonight but in whose hands God has placed others. He is expecting you and me to encourage, to lift up, to bring them to a full realization of the responsibilities of life.

Our position in this world whether it is that of building plants, inventing machines or handling railroads, is simply a means whereby we can build men. A means whereby we can point them to the silver linings of each dark cloud, create a clear understanding of their opportunities and responsibilities of this life, of the value of liberty and the wonderfulness of this country as it has been established by our forefathers. Men, we cannot shirk this responsibility. Let us reach out and use every means—let us employ to work with us the most skilled that we may successfully build men. And me thinks if we will do our best, when life's work shall close, and we turn in our record of life, we will hear the Master of all good workmen say, "Well done, thou good and faithful."

PRESIDENT: Mr. Fannon, on behalf of this club, as its President, permit me to say this is one of the most stirring addresses it has been our pleasure to hear. My reaction to Mr. Fannon's address may be stated in a very few words. Let us measure up to the human side of our men and pat them on the back for good work, also make it a rule to be more with them than we are at our desks.

MR. D. F. CRAWFORD: Mr. President, the subject Mr. Fannon has brought to us tonight has been one of very great interest to me and one which perhaps I have approached from a different angle than he. It seems to me that the greatest task before the American people today is to develop individuality or personality. I say that without any reference to your acceptance of the word Co-operation, Mr. President. I think we have had entirely too much talk about co-operation. Our tendency is to refer everything to committees, to ask this or that association to take our burdens off our shoulders. I can say this with good grace as I belong to some 18 associations. But I feel that my thoughts follow exactly the line Mr. Fannon has spoken of. To be successful in our work, we must develop individuality. I am not thinking so much of the relation between employer and employe as I am of our great country, of our political situation, of our entire industrial institution. We must stop herding people, stop thinking of them as herds and think of them as individuals. One of the things said that appealed to me particularly was that our general idea of education is black boards and desks and text books. We might try a different kind of education, education with a sympathetic vocabulary. I think I have the vocabulary of almost every man I come in contact with who speaks English and also a little bit of French. I can talk blacksmith, fireman, machinist, executive, management, in their languages. In some of my experiences before different Congressional Committees, I find that about the only difference between us was in using the same word with different meanings. By having the education come from the employe, that means familiarity with his vocabulary and not being afraid to use it. I think one of the things that contributes to the gulf Mr. Fannon speaks of is the rather highbrow vocabulary that is used sometimes in addressing a man instead of talking the words he understands. It will not hurt you to speak from his point of view. In trying to make a success not only of our industry but of our lives, we must remember the other fellow. I was asked a few days ago by a young man who had a difference of opinion with one of his colleagues, just what I would suggest that he do. It was none of my affair at all, but he seemed to think I might give him advice of value. I said, "Put yourself in the other fellow's place and see if you think what you are going to do is unjust to you. If it is, don't do it."

PRESIDENT: Mr. Redding, you should have something for us.

MR. D. J. REDDING: I heartily agree with all Mr. Fannon has said about trying to have the confidence of the men you are called on to direct. If you can get that, you will not have much trouble in handling labor; and I quite agree that the way to get it is to know your men thoroughly. The farther you get away from them, the less you have of their confidence and support. I used to have it. I don't know whether I have it yet or not. I recall very distinctly one instance: Some union organizers had gotten into the shop and built up a pretty strong organization. I did not pay much attention to it. Finally the time came when they were called upon to strike in sympathy with another shop of the same system. I heard they were going to their lodge to take a vote as to whether to strike or not, and the chances were they would strike. I got the men in that particular shop together and told them I knew about this deal they were up against. I said I did not believe the men wanted to strike; but they felt they ought to stay by their brothers in the same organization. Then I tried to tell them what the outlook would be in the future, as far as I could see it. I mentioned a number of them by name and said I knew them and their families, and tried to picture to them what the result would be if they lost out in a strike and were out of a job for any length of time—and work was not very plentiful then. I only had about 10 minutes time, but I did the best I could to show them where they were going. They met that night and voted not to strike. Those men believed in me at that time. I believe any man holding the position of foreman or superintendent in charge of a lot of men can keep close enough to his men to have their confidence, no matter what organization they may have or how much outside influence may be brought to bear, if they believe he is trying to be fair, and has always given them a square deal.

MR. A. E. ANDERSON: There is one question I would like to ask Mr. Fannon and that is the relation between the employer and employe as based upon the recognition of the employe by the superior officer—speaking of grade rather than quality—and how he recognizes the personality of the man that is working under him and in what field they acknowledge recognition and use discipline and loyalty of the men; and in addition, what his experience has been, as Mr. Redding has spoken, of the difference in that relationship of loyalty by the propaganda and the instruction the men learn from the various labor unions. I take it that the time Mr. Redding spoke of, discipline was more effective than we have it in these days. When a man joins these labor unions today, he puts it in the power of the unions, even to a military extent, to exercise practically the full direction of how he shall act in case the demand comes for the cessation of the relation of employer and employe. It is so powerful that where the men do not want to strike they are afraid of the one word that is more horrible to a union man than anything else, that is being called a "scab;" and they are afraid also of the undercurrent of abuse and interference that goes even to the families of these men. I would like to have Mr. Fannon tell us his experience of the strength of the men in resisting that powerful influence and protecting the employers that do help them when they remain true and loyal. For so often it is the case that when a body of men have stood fast, that loyalty has not been recognized by the ones in whose service they have taken that chance and sacrificed not only their own future in relation to their labor brotherhoods, but the danger it brings to their families during the period of struggle.

MR. F. S. FANNON: The principal question involved is this, when I have a highly organized or union shop, is there a possibility of influencing a man to remain steady? I am going to answer that by an illustration that you are all cognizant of. I hold this, that the power of the men in directing the union has been broken time and time again by what you may term the unlawful strike, that is, the strike against the power of organized union within itself, the "outlaw" strike. If these men can be influenced by men within themselves to step out of the union and strike when they have been ordered not to, can they not be influenced in the other direction as well? You can answer that yourself.

We have found that you can take a highly organized plant where they have stepped in to a proposition that requires a strike, if you will take your conservative element, men who have been in the shop and look at things squarely; time and again we have found a plant that will set off a strike with these men working among their own men and hold them. On the rebound, too, many times this has happened and we have lost all the benefit we have gained--when a strike has been called and the men who have been faithful do not get their reward, and we find a man who is doubly fortified against any future effort. We have got to let him know our interest has been increased in him because his interest has been increased in us. That is the only way to build confidence.

MR. E. E. MALCOLM: Mr. Chairman, I am one of the Club's new members. I am a locomotive engineer in the employment of the Pennsylvania Railroad and am a union man and not sorry for it. I belong to the Brotherhood of Locomotive Engineers, one of the most conservative unions in the world, and am glad I do.

I had an experience during the outlaw strike which was not extended to many men. I was on special duty for our company at that time that did not interfere with my union membership in any way. Trouble was breaking out all around us. In our town this night a meeting was to be held in the interest of the outlaw movement. Of this meeting I had no knowledge but knew that there was to be a joint meeting held by the local chairman of the brotherhoods, the B. of L. E., the B. of L. F. & E., the trainmen and conductors. At this meeting the company was to be represented by the Asst. Train Master and our Road Foreman was to have a representative there, myself among them. I left my home to attend this meeting and as I went along the street I met a number of the men who were going to the same place as I, so I stopped to talk to them. The result of this was that I, in company with one of these men, went to look after some other business and when we came back the other men had gone, so we started to go to this joint meeting and as we were passing the town hall my friend, noticing that I was not stopping, said, "Where are you going?" And I told him and he said, "That meeting is to be held here in the town hall." And I said I understood it was to be held in the I. O. O. F. hall. He said, "No, it is to be up here." And as the hall was lighted up, I said all right, that I may be mistaken, so we went in and were admitted. When I got inside I looked for the men I had been talking to outside and went over and sat down among them, then looked about for the representatives of the Brotherhoods and others who I was expecting to be present, but could not see them. So I concluded they had been delayed by their work and would be in soon. About this time a gentleman being appointed to the chair arose and introduced himself and identified himself so that all present would know who he was. He then called the meeting to order. After a brief explanation of its purpose, he called to the platform a gentleman whom he introduced as the speaker of the evening. After his introduction, this gentleman made a lengthy speech, in which he explained the many injustices under which the men were laboring, including the wage question, and finally concluded by telling how many states and territories in which he had been employed as a switchman or brakeman and compared the conditions at all points, as he had found them, with the conditions our men were experiencing at the time. The meeting was then thrown open for discussion and to answer any questions that might be asked. At this time I took stock of the speaker and from his apparent age, concluded that he had not been employed long at any one place and was much surprised that our good men should be carried off by the talk of or statements made by one who had been among them so short a time and of whom they knew so little. After some further discussion it was concluded to take a vote on the question of the evening and a motion to strike was asked for. I was very much surprised in the man who arose and made the motion and also the one who made the second. Then, after a few remarks, the vote was taken and the hour set when it would be effective.

I sat among a group of possibly 12 brothers of my own organization and one or two young fellows who were members of the firemen and I said, "Boys, I am not going to be a party to such a vote as that. How about yourselves?" They answered that they were not either. Then I said it was time some one would get up and say something and asked some of the older men in the group to make a statement, but they insisted that I should do it, so I got up and said, "I represent a group of possibly a dozen men around me who are members of the B. of L. E. and will not be a party to this strike vote or action on a question in which the B. of L. E. is not involved." Then the chairman arose and said, "This vote is unanimous and includes every man." Then the speaker of the evening arose and said, "No, the gentlemen are within their rights and if those who belong to the B. of L. E. don't want to go along with us in this move, they are right and cannot be forced." We all got into that meeting by mistake, thinking we were going to a meeting called by our own representatives and having no knowledge of this strike meeting being called. For this reason I always considered my presence there was an act of

God. For had I known the purpose of the meeting, I would not have gone, but afterwards I was not sorry I was there. The speaker of the evening finished by saying, "Now, fellers, I understand there is a joint meeting being held in this town in another hall by representatives of the organizations and some railroad officials. Don't go there because if you do this action will not amount to anything. You fellows will not strike." That, while not the first inkling I had, was the first real proof that I was where I should not have been. Yet I was not sorry I was there. When we were dismissed we went to the other meeting and some of the most radical men in the hall went with us. There we found our local chairman and the Asst. Train Master waiting for us and we got to work and after several good talks by these gentlemen, which were conservative, honest and to the point, the result was that the employes at our terminal saw things from a different viewpoint and we practically had no strike.

What I want to say is this—it is my opinion that if the officers of companies where there is trouble arising are truly interested, if they will be with their men and reach out among them as danger is approaching and get among their own men, as our Superintendent, Asst. Train Master, Road Foreman of Engines and others did at our little terminal during the outlaw strike, talk with the men and know them as they should, under such conditions there would be no strike. In our little terminal when the shop unions strike was called we had no strike there. Why? Because of the older men, the conservative element. If a man has it in him to arise in the morning and look his God straight in the face and with Christ at his side, go to his work with a prayer on his lips for his fellow men, he need fear nothing. A legal union organization doesn't need outside direction; it does not authorize or permit insults or gibes from its members to any one and it doesn't force you into a strike if you don't want to go. Let the industry be what it may, if its stockholders, its management, its foremen, the smallest man among them sees their employes and knows them man to man as they should and when the danger does arise, gets in among them and talks to them, it is not any time at all until you have no trouble.

MR. FRANK LANAHAN: The discussion here tonight clearly brings out the possibilities of this Club, for it is one of the greatest organizations for democracy in existence. Here the employer and employe, the official and the artisan, discuss matters of common interest. Where else is there such an opportunity to become acquainted with the problems and difficulties in commercial life as you get it in this organization? One gentleman here tonight—I do not know his name—spoke of being an engineer and proud of being a union man. As an employer of labor, I openly state that I am proud of him and as members of this club it is quite evident that we are all impressed with the sincerity of the gentleman's talk and his purpose in life. The truth of that old saying, "We would like each other better if we only understood," is well illustrated here tonight. A fact often forgotten is that executives of large organizations are perfectly willing to employ union labor if it will perform along the lines that our friend here has so well depicted. The difficulty arises from the fact that many employes are influenced by radical leaders and allow their sane judgment to be swayed by designing individuals who, for selfish purposes, stir up agitation that leads to wide breaches between the interested parties that frequently culminate in strikes and lockouts. It never occurs to the average employe the responsibility felt by the employer for his working force and the strong desire that actuates him in giving them continuous work under the best conditions that circumstances permit. Greatly concerned is the employer as to the performance of foremen to whom of necessity must be delegated the caring for the operating force. What a load is taken off the mind of conscientious executive if he knows his men are handled by those under him as he himself would do were his other duties to permit of a closer contact with every individual worker. No objection would be found to the organization of employes if it was conducted along the lines of honest endeavor, helpful co-operation and expel any self-seeking radical leadership which frequently, with the aid of physical force, creates a widening breach between men and management. Any man of human instinct would derive the greatest comfort if he were aware that by reason of an organization of employes, lead by the right kind of leaders, that every one of the force under his charge was getting the maximum good out of his employment and receiving the kind of treatment that the boss himself would like to have if conditions were reversed. Through proper channels, complaints could be freely made, suggestions offered and frequently efficiency improved. It is a common interest that is served and happy is the employer who has his mind freed from the vexatious question of the responsibility of employes and can devote full time and energy to the matters of procuring business, financing the company's affairs, and keeping in touch with the general industrial situation.

If the leaders of union activities subscribed to the principles annunciated by this engineer tonight, "God in his mind, Christ at his side and a prayer on his lips," nothing could be more beautiful, for this is true Christianity. With these guiding the members of the union, no employer would object in the slightest degree to unionism, but it is the fear of lack of acquaintance with these principles and the pursuance of a diametrically opposite policy upon the part of the labor leader, that makes the executive in industry today opposed to his employes organizing and coming under the sway of the Bolshevik leader who will advocate a plan of "rule or ruin." If organized labor will purge itself of the walking delegate with a chip on his shoulder and expel the obnoxious members that deride our country and are incessantly comparing the benefits of labor with some far off place, like Russia, to the detriment of the situation in our own country, it would help to bring about a better appreciation of their organization. On the other hand, no employer can hope to be successful if he is not considerate of his organization and if he does not take into account the personal equation of this whole proposition. The subject covers a vast amount of territory and with so many engaged in trying to work out a solution, the hope is strong that there will come a better understanding that will work to the mutual advantage of those most concerned.

Gentlemen, the thing that is strongest with me and always has been, is the personal touch. If you can have that with your employes, and if you have sympathetic officers, with these ideas of right and justice and decency and charity—and charity does not mean doling dollars, it means helpfulness, it means encouragement, it means brotherhood—we who have come up from the ranks, if we can look forward to applying the principles of our occupation as our friend did who spoke, what hope this country may have for successful leadership. What is it in this country today that has made those who are its successful leaders? Are they men born with a silver spoon in their mouths? Are they men who have been given fortunes? A few years ago the president of the Pennsylvania Railroad, Mr. Rea, walked the tracks between McKees Rocks and Carnegie on the P. C. & Y. Railroad, as a roadman. Look where he is today. Did that come by radicalism? Did it come by any power given him by his fellow men? And you who are identified with the New York Central know full well the story of Al Smith, telegraph operator in Youngstown. Today what is his job? Head of one of the greatest transportation systems in the world. Take industry right around us here. What individual within the radius of Allegheny county who does not know Andrew Carnegie's story, how as a poor Scotch boy from the other side he worked on the railroad. When he died he was possessed of an immense fortune. How did he use it? That you and I in this district might enjoy libraries, the Carnegie Institute, where any poor boy may go at a smaller cost than any other instituion of learning and fit himself for the battle of life. Take the case of Charley Schwab. When I was about the height that Mr. Fanning described himself when he longed for those red topped boots, my dad used to drive me up to Loretto where he had gone after accumulating a few paltry dollars working as a molder. He liked to go back to the scene of his boyhood and look over the old school and tell me a few things he did when a kid. At that particular time a stage coach ran from Cresson to this little town of Loretto. Who was the driver of that stage coach? No other than the president of a great steel company today, Mr. Charles M. Schwab. Take the largest plant manufacturing steel cars today, the Standard Steel Car Company, John Hansen 25 years ago in Millvale was delivering meat to the mill workers in that district. Today he is recognized as the outstanding figure in the car building industry.

I could go on citing case after case. What is the purpose of this? To show you that every individual here has the opportunity in this country to rise to the greatest heights to which his ambition may soar. If that is the case, if there is nothing to hinder you from reaching any position of honor and distinction, why in the world do we want any radical to come and tell us we are not getting what we are entitled to get, and to sow in our hearts the seeds of discontent and bitterness? Are you going to allow yourself to be confused with thoughts of that kind? Are you going to throw everything to the winds or are you going to follow the course which is so well spoken here by our engineer friend?

MR. D. F. CRAWFORD: If there is no further discussion, I would like the privilege of moving a rising vote of thanks to Mr. Fannon for his very excellent address.

(The motion prevailed unanimously by all members rising.)

There being no further business, upon motion the meeting adjourned.

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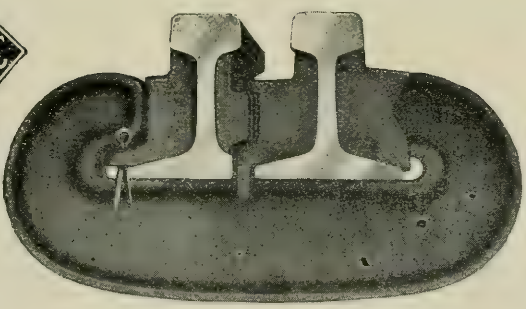

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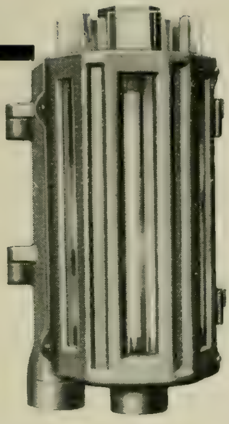

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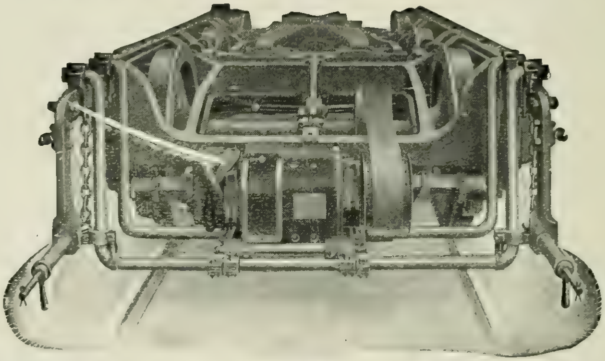

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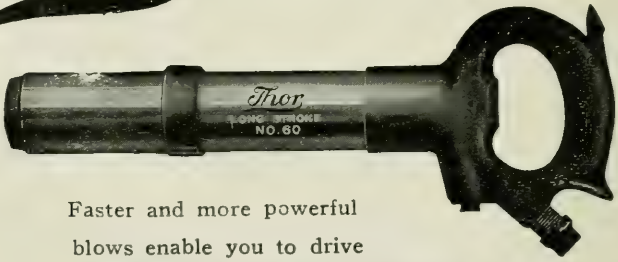

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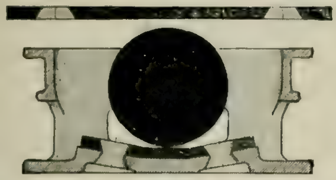

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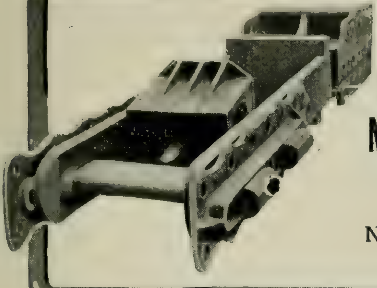

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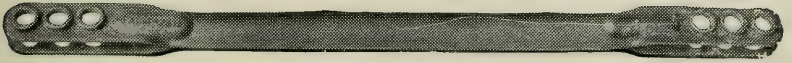

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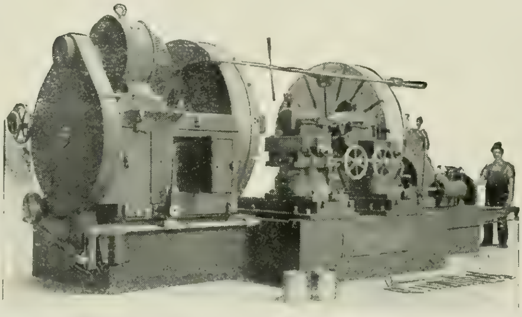

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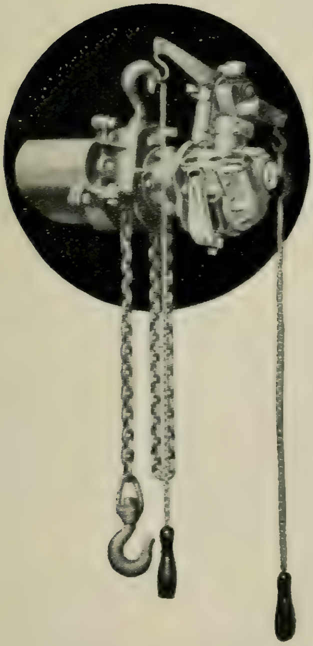

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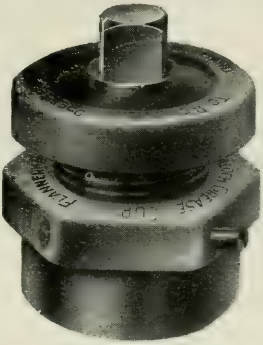

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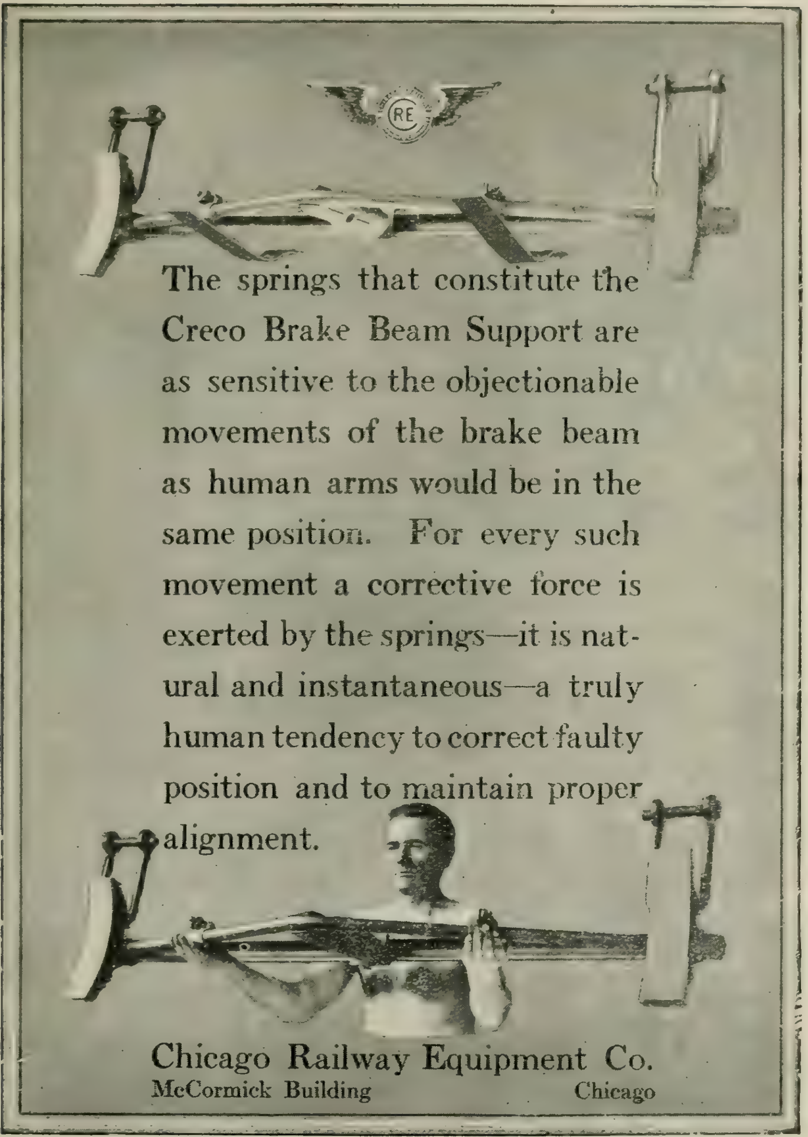

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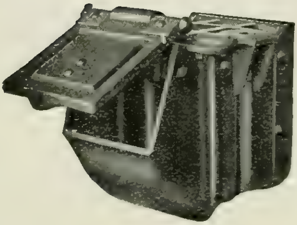

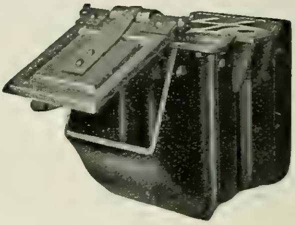

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Pittsburgh, Pa., Jan. 24, 1924
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F. H. STARK	November, 1905, to October, 1907
*H. W. WATTS	November, 1907, to April, 1908
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F. R. McFEATTERS	November, 1910, to October, 1912
A. G. MITCHELL	November, 1912, to October, 1914
F. M. McNULTY	November, 1914, to October, 1916
J. G. CODE	November, 1916, to October, 1917
D. M. HOWE	November, 1917, to October, 1918
J. A. SPIELMANN	November, 1918, to October, 1919
H. H. MAXFIELD	November, 1919, to October, 1920
FRANK J. LANAHAN	November, 1920, to October, 1921
SAMUEL LYNN	November, 1921, to October, 1922
D. F. CRAWFORD	November, 1922, to October, 1923

*—Deceased.

Meetings held fourth Thursday of each month except June, July and August

PROCEEDINGS OF MEETING

January 24, 1924.

The meeting was called to order in the Fort Pitt Hotel, Pittsburgh, Pa., at 8 o'clock P. M., President Geo. D. Ogden in the chair.

The following gentlemen registered:

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Abel, A. W.
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Anderson, G. S.
Anderson, J. W.
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Clement, M. W.
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Conlon, John F.
Conway, J. D.
Covert, Wm. T.
Crawford, D. F.
Croke, Thomas F.
Crouser, C. S.
Cunningham, R. I.
Dambach, C. O.
Damore, Sam A.
Darrah, C. B.
Davidson, D. B.
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Durkin, Jas. E.
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Endsley, Louis E.
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Gurley, L. R.
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Hansen, Wm. C.
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Heinlein, Geo. J.
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Hoover, J. W.
Hoover, R. C.
Howe, D. M.
Howe, D. M., Jr.
Huber, H. G.
Hudson, W. L.
Hulick, E. G.
Hussong, Albert C., Jr.
Johnston, W. A.
Jungbluth, Adolph
Karam, I. A.
Keenen, J. W.
Kegel, A. E.
Kelly, J. P.
Kelly, L. J.

Kempton, J. W.
Kinch, L. E.
King, C. F., Jr.
Kranse, H. A.
Kummer, Jos. H.
Laird, George R.
Lanahan, Frank J.
Lanahan, J. S.
Landis, Wm. C.
Lappe, J. C.
Laughlin, R. J.
Laurent, G. F.
Lehr, H. W.
Lent, John F.
Lenz, W. W.
Livingston, E. M.
Long, R. F.
Lowe, W. D.
Lower, N. M.
Luddy, W. E.
Ludgate, B. A.
Ludwig, C. F.
Lynn, Samuel
Malcolm, Elmer E.
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Matchett, H. K.
Meeker, H. B.
Meschter, C. F.
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Hickling, E. G.
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Jex, W. S.
Jungbluth, Herbert
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Titzel, John M.
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Wright, J. L.
Wunderly, R. F.

The call of the roll was dispensed with, the record of attendance being obtained through the registration cards.

The reading of the minutes of the last meeting was dispensed with, as they are to appear in printed form.

The Secretary read the following list of applications for membership:

Alexander, F. McC., Chief Clerk, Penna. Railroad System, 300 Brilliant Ave., Aspinwall, Pa. Recommended by R. V. Headington.

Bennett, James G., Gang Fore., Penna. Railroad System, 423 North Ave., Verona, Pa. Recommended by H. B. Meeker.

Brennan, John T., Asst. to V. P., Greenville Steel Car Co., Greenville, Pa. Recommended by J. A. Ralston.

Brown, Laron P., Sales Mgr., Shifflet-Cumber Co., Inc., 373 Frick Bldg. Annex, Pittsburgh, Pa. Recommended by C. Thomas.

Campea, T. A., Foreman, P. & L. E. R. R., Box 233, Elizabeth, Pa. Recommended by Sam A. Damore.

Campbell, Clyde W., Salesman, Chicago Pneumatic Tool Co., 1241 East 49th St., Cleveland, Ohio. Recommended by E. K. Lynch.

Dimmick, James G., V. P., Greenville Steel Car Co, Greenville, Pa. Recommended by J. A. Ralston.

Downes, James R., Supt. Frt. Transportation, Penna. Railroad System, Central Region, Pittsburgh, Pa. Recommended by J. A. Ralston.

Eysmans, Julien L., Traffic Mgr., Penna. Railroad System, Penna. Station, Pittsburgh, Pa. Recommended by M. W. Clement.

Fannon, S. F., The Sherman Service of Boston, 31 Milk St., Boston, Mass. Recommended by John F. Lent.

Foote, Frederick D., Secy. & Treas., Greenville Steel Car Co., Greenville, Pa. Recommended by J. A. Ralston.

Hackett, C. M., Boiler Maker Fore., Penna. Railroad System, 136 Oakmont Ave., Oakmont, Pa. Recommended by R. V. Headington.

James, John H., Fore. Mach. Shop, Penna. Railroad System, 543 Penn St., Verona, Pa. Recommended by R. V. Headington.

Lee, Elisha, Vice Pres., Penna. Railroad System, 909 Penna. Station, Pittsburgh, Pa. Recommended by M. W. Clement.

Lowry, Wm. F., Jr., Material Assembly Dept., American Car & Foundry Co., Farmers Bank Bldg., Pittsburgh, Pa. Recommended by J. A. Ralston.

Lynch, Herbert J., Purchasing Agent, Greenville Steel Car Co., Greenville, Pa. Recommended by J. A. Ralston.

Milby, T. A., State Auditor Gen. of Pa., 309 Grace St., Pittsburgh, Pa. Recommended by Samuel Lynn.

Myers, Arnold, R. R. Equipt. Insp's, Carnegie Steel Co., 1402 Louise St., Munhall, Pa. Recommended by J. A. Ralston.

Phelps, W. G., Purch. Agt., Penna. Railroad System, Central Region, 724 Penna. Station, Pittsburgh, Pa. Recommended by Frank J. Lanahan.

Redding, J. H., Supt. Penna. Railroad System, Federal Street Station, N. S., Pittsburgh, Pa. Recommended by W. E. Guignon.

Ross, Robert J., Salesman, Westinghouse Elec. & Mfg. Co., 1442 Widener Bldg., Philadelphia, Pa. Recommended by H. G. Huber.

Schrader, A. P., Salesman, Westinghouse Elec. & Mfg. Co., 1801 Union Bank Bldg., Pittsburgh. Recommended by H. G. Huber.

Scott, James C., Local Rep., American Car & Foundry Co., Fa[illegible]rs Bank Bldg., Pittsburgh, Pa. Recommended by J. A. R[illegible]n.

Shelton, Wm., B., M. P. Insp'r, Penna. Railroad System, Uniontown, Pa. Recommended by I. A. Karam.

Snowden, Howard J., Salesman, The Baldwin Locomotive Works, 375 Union Trust Bldg., Pittsburgh, Pa. Recommended by J. A. Ralston.

Wells, Franklin H., Test Dept., Westinghouse Air Brake Co., 745 Hill Ave., Wilkinsburg, Pa. Recommended by C. W. Maliphant.

Williams, L. N., Trav. Coal Frt. Agt., B. & O. R. R., 914 Oliver Bldg., Pittsburgh, Pa. Recommended by J. W. King, Jr.

PRESIDENT: As soon as these applications have been approved by the Executive Committee, the gentlemen will become members upon payment of the year's dues.

If there is no further business, we now come to the program of the evening. We are delighted to have with us as a fellow-member now, and also as the speaker of the evening, a gentleman with whom it has been my pleasure to work for many years; to be associated with him and to know him very intimately. I congratulate you on having him come here as a fellow-member. It is my very great pleasure to present Mr. Lee, who will speak to you on the subject: "The Present Railroad Situation."

"THE PRESENT RAILROAD SITUATION"

By Elisha Lee, Vice President, Pennsylvania Railroad System.

Mr. President and Members of the Railway Club of Pittsburgh:

It is not often that I have had the pleasure of addressing an audience containing so many members of my own profession, and I assure you that I am delighted at the opportunity. I have been railroading myself ever since I got my first job with the Pennsylvania 31 years ago. I have found it a constantly fascinating and absorbing business, and much more besides. It is a red-blooded, two-fisted man's game in which strong friendships are engendered and demands and takes the best there is in any man who sticks to it and makes it his life work.

Never before in my own career have I felt so many reasons for pride in our calling as at present. The railroads have always been splendidly efficient servants of our country, since they emerged from the experimental stage some 90 years ago. They were the chief physical means by which our territory was opened to settlement and civilization. Their subsequent evolution paved the way for our vast industries and the development of industrial mass production, which is the real basis of our immense material wealth and economic leadership. As they exist today, with their roadbeds, tracks, terminals and equipment of unrivalled excellence, our great railroad systems are more vital than they have ever been in the past to sustaining the nation's life and progress.

Of even greater significance and importance is the fact that far more people understand these truths than ever did before, and realize the absolute necessity for encouraging railroad growth and progress. This warrants something much farther reaching than pride in railroad achievements. It rorms the substantial basis for a sound optimism upon the railroad's future.

It is true that the present railroad situation involves many grave problems. I am happy to count myself among those who view the outcome hopefully and with sober confidence. Our reasons are very simple. The railroads are indispensable to the country. Continued national progress is impossible unless they are allowed to grow and prosper. These facts are better known than ever before and are gaining a wider recognition every day. I have great respect for the common sense of my fellow citizens and refuse to believe that in the light of their broader knowledge, they will indefinitely keep on permitting such invaluable national assets as our railroads to be misused for political ends or despoiled for narrow and selfish motives.

The railroads stand higher and better in the public eye today than at any previous time in our generation. They have won the public respect and won it fairly. They have been given the cleanest bill of health of any department of American business enterprise, after nearly forty years of the most searching investigation and microscopic flaw-hunting to which any form of business has ever been subjected in any country. And they have withstood, many times over, more organized abuse, baseless charges and unscrupulous villification than have been heaped on all other branches of business endeavor put together.

That they have weathered all this without general financial ruin, and are today actually in the best physical condition of their history, are, I think, the best testimonials of their inherent soundness and I believe, in justness, it may be said to the integrity and ability of their managements also.

The people of the United States are today, and long have been, the greatest users of railroad service in the world. We possess within the boundaries of our country about 40 per cent of all the railroad facilities in existence. Roughly, we have seven to eight times as much railroad plant, in proportion either to our country's area or population, as the world's average. These figures serve to measure in an approximate way our relative dependance upon railroad service, and show why we, of all countries, should do the most to foster and encourage further development and progress in railroad transportation.

The American railroad systems, as they stand today, represent an investment in physical facilities of over 22 billions of dollars. It may be of interest to consider the items of actual property which that investment has produced. A compilation just made on behalf of the railroads as a whole, is very illuminating and instructive and I will summarize it briefly.

Trackage and roadbeds, $10,000,000,000.

Locomotives, at a very conservative estimate, $1,380,000,000.

Freight cars, $2,400,000,000, and they could not be bought for that figure today.

Passenger cars, $570,000,000.

Materials and supplies, $500,000,000.

Working capital, $500,000,000.

Stations, terminals and other facilities aggregate about $7,000,000,000.

The total of all of these figures of value is $22,350,000,000, and that may be taken not merely as a conservative, but as an absolute rock-bottom valuation of the physical worth of the American railroad systems as they exist today.

Were they to be valued on the basis of present prices of materials, the actual market worth of real estate and prevailing costs of labor and wages, a figure at least half as great again would inevitably be reached. It is indeed questionable whether our railroad systems could be duplicated today for 35 to 40 billions of dollars; yet it has been contended by men now in Congress, such as La Follette, Brookhart and others, that the valuation should be scaled down from over 20 billions of dollars to somewhere in the neighborhood of 12 or 13 billions of dollars, as a basis for revising rates downward.

Needless to say, this would be direct confiscation—the taking of private property without compensation—and I, for one, do not believe the people of this country will permit our constitutional guarantees to be torn to shreds in this manner.

As we all know, the physical valuation work of the Interstate Commerce Commission is nearing its completion. There is every reason to believe that instead of showing the railroads to be over-capitalized it will show them to be under-capitalized and worth, at least, the full amount of their book figures of property investment And this, it must be remembered, will be upon a basis of valuation which, in view of the Commission's methods, can only be characterized as ultra-conservative.

Nevertheless, enlightened public opinion must be constantly on guard to protect the railroads from unjust assaults. Thus far, during the present session of Congress, there have been nearly one hundred bills introduced in both houses for further regulation of the railroads. Nearly all of them are aimed directly at reducing the revenues of the carriers regardless of the consequences. It is deplorable to realize that with all the oratory and criticism launched against the railroads since the session began, there has not been a single practical plan or proposition advanced in Congress to aid the railroads in reducing their operating expenses.

Let me state right here that the only hope of cheaper transportation in the United States lies in lessened operating costs and this does not necessarily mean wage reductions. All plans or proposals to reduce rates without lowering costs are illusory and deceptive. If the costs of railroad operation are not paid in rates, they will sooner or later be paid in taxes under governmental operation and political management. And they will be paid again, and in far more burdensome form, through the impairment and deterioration of service.

Happily, the railroads are moving into the new year with the prestige of genuine and indisputable achievement behind them. What they accomplished in the year just closed has won the admiration of almost everyone, save the small and dwindling number of professional critics, chiefly in the ranks of politics, whose business and stock in trade is unjust and unscrupulous abuse.

During 1923 the traffic records of all previous years were shattered. Guaged by the volume of car loadings, the movement of freight was more than 10 per cent greater than in 1920, when the previous high record was made. It was over 12 per cent above the movement of 1918, when the peak of wartime traffic was recorded. For nine consecutive months last year, averages of more than one million cars of freight were loaded, and the entire year's average will only be slightly less than a million cars a week.

Never before have the physical facilities of American railroads—or indeed, those of any other country—been so effectively and efficiently utilized as in the year 1923.

While this was going on, vast additions were also made to the permanent plant of our railroads, including 200,000 new freight cars and nearly 4,000 new locomotives. These, and other additions to rolling stock and facilities represented total capital expenditures in 1923 of nearly $1,100,000,000. This constitutes the largest progress of betterments and improvements ever consummated in a single year, and marks the only occasion on which James J.

Hill's ideal of putting a billion dollars a year of new capital into the railroads was ever realized.

Beside what was actually spent in 1923, more than $300,000,000 of authorized expenditures have been carried over into 1924, without considering what further sums may be authorized during the current year. Taking the two years, 1922 and 1923 together, the grand total of the sum spent or authorized during them for capital improvements on the railroads of the United States exceeds $1,800,000,000.

Incidentally, it is important to realize that the tax bills of the railroads as a whole during 1923 were more than $1,000,000 for every working day of the year and very considerably exceeded the sums paid in dividends to the stockholders who are the owners of these properties.

The results achieved in moving the record-breaking traffic of 1923 show what the railroads of America are capable of doing under a more encouraging atmosphere of legislation and regulation. The encouragement as to legislative factors is derived from the constructive provisions of the Transportation Act of 1920—an Act which stands out in sharp relief from all other railroad laws ever enacted by Congress as being the first and only instance in which the National Legislature has recognized that the fostering of railroad progress and success are, or should be, any concern of governmental regulation. The Act specifically states that they must be so regarded, and directs the Interstate Commerce Commission to exercise its rate-making powers with due respect to these considerations.

This has naturally led to a greatly improved atmosphere on the part of our regulative bodies, notably the Interstate Commerce Commission itself. I am glad to say that the Commission, as now constituted, gives every evidence of desiring to treat the railroads fairly and to deal with their problems constructively. The Commission in this work, however, needs the backing and support of public opinion, and particularly of the business men of the country, who are the great users of the railroads. It is gratifying, indeed, to know how generally and widely business men everywhere are coming to realize the situation and throw the weight of their influence on the side of just treatment for the indispensable enterprise of transportation.

Railroad men and their brother workers, the transportation experts of our industries, should at all times consider themselves as missionaries in spreading the gospel of truth about the railroads. We can, in that way, exert an immense influence which cannot fail to make its effects felt.

The history of mankind is a record of the growing participation of more and more people in more and more of the good things of life. This is progress. And since this is the goal toward which civilized society steadily advances, we must conclude that human history, taken as a whole, is a chronicle of progress. Our problems are the problems of life and growth, not of death and decay; and in spite of follies and failures we are slowly but surely going forward.

Events of the last 25 years, beginning with the Spanish War and ending with the World War, have profoundly changed the status of our country. Their final result has been to leave us the richest and most powerful nation in the world, vested with a corresponding responsibility toward all mankind.

While cherishing our ideals and ever looking to them for inspiration, we must realize that material wealth is, and must continue to be, the physical basis of America's greattness. This is a fact which, as a nation, we must constantly keep before us if we are to retain our new place of dominance. It is a fact which should particularly be grasped by those who control our political destinies. They should bear in mind that every contribution to the production and distribution of wealth means a stronger and more enduring America, and that every policy which tends to restrict or discourage the production of wealth means a weakening or jeopardizing of our position in the family of nations.

These are all around and compelling reasons why our railroads, the arteries of our commerce and trade, deserve the protection and encouragement of our lawmakers and administrators. I, for one, firmly believe we are coming to the time when it will be "good politics" to be known as being on the constructive side of railroad questions. Certainly, railroad baiting, in or out of Congress, has lost its charm simply because the baiter now has an educated and informed public to deal with.

Just a personal thought. Undivided loyalty is the basis of all true service. That is a statement of moral principle. Wages in any calling can only be paid out of production. That is a basic law of economics. It is up to us all that the mutual effort of men and management give practical recognition to these vital truths as applied to the great enterprise of public service in which we are engaged.

Radicalism, with its false doctrines which preach restriction of output and tell men that work is an evil, is the greatest enemy of individual achievement. Individual achievement is the only true basis upon which national progress can rest. Here in America we believe that we are developing a type of individualism finer than any other the world has yet seen. No one has stated its principles more clearly or convincingly than Herbert Hoover. Let me read you his platform in his own words: : : :: : : : : : : :

"Our individualism differs from all others because it embraces these great ideals; that while we build our society upon the attainment of the individual, we shall safeguard to every individual an equality of opportunity to take that position in the community to which his intelligence, character, ability and ambition entitle him; that we keep the social solution free from frozen strata of classes, that we shall stimulate effort of each individual to achievement; that through an enlarging sense of responsibility and understanding we shall assist him to this attainment; while he in turn must stand up to the emery wheel of competition."

Let me earnestly commend that platform to your consideration as a sound and sane basis from which to proceed to the solution of all our social problems, including those of capital and labor, whether in the railroads or elsewhere.

(Owing to the extensive program for this occasion, President Ogden was unable to present the following address at the January meeting. It is herewith reproduced and opportunity for discussion will be afforded at a subsequent meeting.)

SALEMANSHIP

President Ogden, Fellow-Members of the Railway Club of Pittsburgh:

In compliance with a promise I made to bring a brief message of interest to the membership generally upon the occasion of our monthly meetings, I desire to address you very briefly tonight upon the subject of "Salesmanship."

Splendid opportunities open today for further bettering the condition of mankind lie in finding practical ways and means to bring about improved efficiency in the results of human effort. The last fifty years have witnessed greater progress in physical science and its practical application to raising the standards of life and living than has been recorded in all of previous history.

In our modern civilization every economic activity somewhere involves salesmanship to make it complete. The worker sells his services and abilities to the employer. The employer, in turn, sells to the worker the opportunity to use his skill and effort in useful production. The enterprise as a whole, in which both worker and employer are engaged, sells its output to its customers. The customers, on their side, must be regarded as "selling" their good will and patronage to the enterprise, in exchange not merely for the commodities delivered, but also as an inducement for continuing the business and maintaining or improving the quality of its output.

In all of these transactions there is an exchange of something valuable, whether tangible or intangible, and, before the transaction is finished, both parties must be convinced that, from the viewpoint of each, the exchange is desirable and advantageous.

This is another way of saying that in our highly complex industrial life everyone of us makes his living ,and whatever he may win besides a living, through some form of salesmanship. We sell to one another goods, commodities, services, loyalty, fidelity, goodwill, patronage, confidence or security, or some form or combination of these elements. But every completed transaction, by which we have bettered ourselves and the world in general is in the last analysis a definite form of salesmanship.

In our daily contact with associates in the shop or in the office, it is highly desirable to cultivate salesmanship—by which I mean that our work, conversation and general demeanor shall inspire confidence and respect with those with whom we come in contact. Then, if at the end of the day, we can satisfy ourselves that those associations have been mutually agreeable, with some acts of kindness dispersed here and there, it will be generally conceded that one of the fundamentals of salesmanship has been justly recorded.

Is it not, therefore, paramount that, in the effort to improve our own conditions, one of the gretest acts of kindness is to assist those of our associates who lack the ability to cultivate popularity with their companions? In this manner we will be able to spread sunshine to make more cheerful the working hours of the day.

INVENTORY—HUMAN ENDEAVOR.

It is, perhaps, because an inventory of ourselves is infrequently taken (and the statement has been repeatedly recorded with only too great accuracy) that the greatest extravagance in the world today is the waste of human endeavor. If you are an employer, it is good salesmanship to have your workers believe in your integrity, fairness, also feel a confidence in your ability to keep abreast of the times and hold your own in the upbuilding of the industry even in the face of keen competition, either domestic or foreign.

On the other hand, the employe must constantly interest himself by a daily inventory as to the efficiency of his services, including loyalty and enthusiasm for the success of the industry.

It has been truly said that, in order for the employes to succeed, they must see to it that the production of the industry, both with respect to volume and quality, is such as to insure success against varied competition.

Is it not a fact, therefore, that salesmanship in the truest meaning of that term must begin at the inception of manufacture in order that customers, in addition to the goods or services paid for, shall cherish a conviction of value received, also that indefinable something beyond mere money value that goes towards the upbuilding of good will and confidence, which we properly term good salesmanship?

For a lifetime or more men have been so busy with the perfecting of machinery, with extending the applications of electricity, with developing the modern railroad, the telephone, the telegraph, the motor car, the aeroplane and radio communication, that, until lately, we have hardly realized how fundamental is the problem of adapting human relationships to the vastly changed conditions, which these and other great advances have brought about. To take a specific example, consider how very necessary it now is to modify our views on the proper relationship between employer and employe, when we contrast the condition which existed when master and man worked side by side at the same bench, with that which now prevails when a plant employing many thousands of men may be directed by executives remotely situated in charge of the several departments. Yet such a stupendous change as this has taken place in a relatively short period of time, not much, if any, greater than the extent of a single moderately long life.

Perhaps the greatest problem of modern business organization lies in finding a true and sound basis upon which to foster the relationship between employer and employe firmly and securely under the profoundly altered conditions which now exist. Men and management must cultivate salesmanship toward each other honestly and honorably, to deliver a fair measure of consideration on both sides and thus win and hold each others confidence. In a broader way, we must realize the principles of salesmanship as applied to every department of life, because there is no form of human endeavor at the present time which has not been fundamentally changed by the vast increase in mass production.

PLANT INVESTMENT

Perhaps the most important lesson for all of us to learn is that we shall have to accustom ourselves to taking a radically new view of what constitutes the investment in any business undertaking. Up to very recently there was no thought of investment as representing anything beyond the sums of money put into machinery, buildings and other appliances or structures, or, in other words, the physical plant. But every going business is constantly piling up another and far vaster investment in human intelligence and muscle. I refer to the investment in payroll, which can never stop unless business stops, and which tends in an incredibly short period of time to overtop the investment in the plant.

Of course an accountant will tell you that a payroll expenditure from his point of view is ordinarily not an investment. We concede the correctness of that statement as a technical principle of bookkeeping. But from the viewpoint of broad and progressive business policy we can by no means afford to accept such a conclusion. Any enterprise which is to endure and grow must reckon with its investment in payroll as well as the investment in the plant. The problem involves development of a group of employes satisfied with their present work and their opportunities, respectful of their employers' business capacity, imbued with trust in his justice, and animated with the same loyalty toward the enterprise and its management, as in the older and simpler days that existed between the worker and master, who was often at one and the same time employer and friend. There is no greater need in modern business than to bring back that old sense of friendship between men and management which was impaired and, in many cases, practically vanished over the war period.

It is rather interesting to see what some of these ideas mean in a practical way when we consider them with relation to concrete examples. Let us take for instance the company with which

I myself am associated—the Pennsylvania Railroad System. Not for the purpose of boasting but merely to illustrate my point a little more clearly, I will recall to your minds the fact that it is the largest transportation system in the world. Physically, it consists of a network of more than 12,000 miles of railroad line and about 25,000 miles of track, extending over 13 states and the District of Columbia. It owns and uses some 7,600 engines, 8,200 passenger cars, and about 260,000 freight cars, together with innumerable other items of equipment, structures and facilities necessary for the handling of a vast traffic.

The investment in this plant up to the present time has been about $2,200,000,000. That is a vast sum of money, as we all appreciate, and it has taken 77 years of accomplishment—that being the present age of the Pennsylvania Railroad Company. The average man, when he thinks of the investment in the Pennsylvania Railroad, has in mind either these figures or the physical property which they represent. He may lose sight of the fact, however, that this aggregation of property, or, as the economists term it, "fixed capital," would be useless and purposeless but for the good will of some 210,000 workers who operate it. And he may also lose sight of the further fact that recently our company has been paying not far from $1,000,000 a day or over $300,000,000 a year in payroll.

This means that in the next seven years or so our company will have invested in its payroll a sum of money approximately as great as the investment in its physical plant in 77 years. When we look at it that way we see how vast is the importance of seeing to it that the permanent elements of good will, loyalty, team work and the spirit of co-operation can only be realized through the highest type of salesmanship in its various ramifications.

I have taken the Pennsylvania Railroad merely as a specific illustration with which we are all more or less familiar. The railroads of the United States at the present time represent an investment in physical plant of about $21,000,000,000. On the present basis of compensation the investment in payroll will duplicate that sum within the next six years. It will be seen, therefore, that it is really a matter of national concern that this vast payroll investment should be utilized wisely and should produce the vastly beneficial results which are capable of realization under intelligent and sympathetic relationships between management and working forces.

If we took other forms of business besides railroading, we should find that the payroll investment multiplies even faster.

There is a very important point which, at this juncture, I should like to bring out as definitely and emphatically as possible. It is that the duty of safeguarding the payroll investment is not one of management alone. It is of fully equal importance to the employes. In fact, the duty is a joint one and can only be performed properly and intelligently by joint action, based upon acceptance of the truth that the interests of employer and employe in any enterprise are mutual.

I have spoken chiefly in generalities, hoping to bring before your minds the importance of the fact that all genuine success in life rests, sooner or later, upon good and sound salesmanship, and that no sale is sound unless genuine value and full measure are given on both sides. The most important of all fields of salesmanship has to do with the buying and selling of human service, and it is in that field that it is most vital to be sure that all transactions are upon a sound and just and enduring basis. Such a basis can only be found in mutual trust and understanding.

On my own road we—and by "we" I mean both men and management—are making an earnest and sincere effort to establish such a basis through our mutual plan of employe representation. That plan, which is meeting with greater measure of success every day, has been defined as a working system of collective bargaining within our own ranks. In a broader way, it is a plan to humanize the buying and selling of services and employment, and should be judged in that light. Its achievements are a tribute to the fairness, the common sense, the honor and justice of the great body of our employes and workers who are finding a new and vastly better basis of relationship under its terms. In the end, the greatest beneficiaries will be the public, to whom both officers and men must account for good salesmanship.

PRESIDENT: I know there are many here who will have something to say of interest in connection with the very able address of Mr. Lee. With your kind permission, I will ask Mr. Lanahan to open the discussion.

MR. FRANK J. LANAHAN: The disadvantages are quite obvious of being called upon to speak on this important matter, after the clear elucidation by Mr. Lee. The intimate connecting of the country's prosperity with transportation, is an angle to the problem that oftentimes is overlooked. As he gave those figures just a moment ago, of $1,800,000,000 of railroad expenditures, the thought flashed through my mind, what would they have meant in the way of interference in the country's prosperity had it been eliminated during this past period of commercial activity? Think what this means to a district like Pittsburgh with its hundreds of thousands of workers. Stop and give this proper consideration. How would its absence have effected you personally—much more vitally than you had any conception. Mr. Lee laid stress upon the fact that $1,000,000 a day of every working day, is paid by the railroads of this country in taxes. That would be $300,000,000 a year, and if this were passed on to the taxpayers, would fall upon your shoulders and mine. Some burden, $300,000,000!

I am glad to hear one in the position of Mr. Lee speak of the confidence he has in the American people regarding the railroads. It pleases us to hear him express himself without apprehension concerning the future. We in this Club know that it is only sixteen months ago that we heard an address by an eminent authority, Mr. Samuel O. Dunn, in which he gave us an intimation of the agitation that was taking place in the West concerning the feeling towards the railroads, as the people beyond the Missouri river had a false conception of the transportation conditions and were being misled by self-seeking politicians. It is rather hard after all the propaganda that has been flowing like water, to have the people in the Western states realize the necessity of a national policy toward railroads. We must appreciate that we should be a united people, that our business interests are all linked up so closely with transportation, that they are absolutely inseparable and comprehend that anything done for the advancement of the transportation companies is beneficial to us individually. It is a case of "good for one, good for all." If this could be tied up in a practical manner, it is apparent that many of the representatives in the halls of Congress—who are quite desirous of following the wishes of their constituents—would be more responsive to the needs of the hour. If the people-at-large would make known their opinion on subjects of this character, it would help to influence those members in their action. As Mr. Lee has pointed out, the great number of bills that have been introduced in the present Congress, detrimental to the railroads and our Congressmen and Senators are going to act on these bills, is it not wise for us to make known to our respective representatives how we feel on those subjects?

The policy to be advocated by the thinking people of the present time on railroad matters should be clearly manifest. The Transportation Act is upon the statute books. Leave it for further trial. Ascertain what will be the result of its operation before you cast it aside. Let it produce effects, upon which we can base such legislation as might be necessary to remedy any difficulties that would arise. Gentlemen, there is no more fitting place, to my way of thinking, for a strong resolve to back up the railroads in the splendid fight they are making today for their very existence against the demagogues, against those railroad batters of the type of La Follette and Brookhart and Johnson, men who would destroy the transportation systems of the country for the benefit of their ultimate plan of forcing government ownership. Whether we be railroad executives, whether we be employes of the railroads, whether we be those who sell to the railroads, whether we be financial people or trades people in a district that is so dependent upon the life and success of the railroads, we should certainly not be dead to our own interests and allow people of other sections of the country with their selfish interests, to clamor for the reduction of rates and the increase of wages to influence national legislation against our own business interests and prosperity.

Gentlemen, reduction of the values of railroads seems to me to be along the line of the man who bought a house and lot years ago, and because of the trend of the times and business, we assume that that house and lot today are worth double what he paid for it, and yet, some arbitrary power comes along and compels him to dispose of that house and land at the figure he gave for it. Would any of us stand for that? Yet that is exactly what they are trying to do today by this radical legislation to bring down the valuations of the railroads to the point where the return will be so small that the railroads will not be able to take care of their fixed charges, much less dividends.

There are many points that might be touched upon in Mr. Lee's address, but the main thought I would like to leave with you, is to urge you in a practical way to the accomplishing of the purpose of his address for the promotion of prosperity in this country, and that each one of you carry home tonight, a firm resolve that by your own words you will convey to your Congressmen your thoughts about a fair and a square deal for the railroads.

PRESIDENT: Thank you, Mr. Lanahan. We have with us tonight a former president of one of our competing railway clubs and if we continue to get new members, as we have this evening, we confidently expect to surpass that club in membership some day. I have reference to the New York Railway Club and Col. James Milliken, president of the Pittsburgh Testing Laboratory and former president of the New York Railway Club.

COLONEL JAMES MILLIKEN: Mr. President and gentlemen of the Pittsburgh Railway Club, I feel much honored being called on to speak, particularly in view of Mr. Lee's wonderful address. He has covered his entire subject so thoroughly that there is really little more that can be said.

I would, however, like to emphasize one point in Mr. Lee's address; namely, the effect of prosperity of the railroads upon the country at large. It is really a matter of fact that from 40 to 42 per cent of the purchases of the country are the purchases of the railroads. By that I mean that this percentage of the steel output of the mills of the country is used in railroad construction and operation, and these same percentages apply very largely to all of the manufactured products of the country.

This means to us Pittsburghers that 40 per cent of our business comes from the railroads. Had the railroads not had such a prosperous year as last year our business would have been proportionately reduced; and this in turn means that we all want to lend a hand to assist in the prosperity of the railroads, which means the prosperity of the entire country.

PRESIDENT: Mr. Anderson, have you any comment to make?

MR. A. E. ANDERSON: Mr. President, the summary that the speaker has given us in such impressive and magnificent form recalls to my mind a dramatic passage in Old Testament history, when a man of the same name as the speaker was called from his daily duty of "plowing with 12 yoke of oxen before him and he with the twelfth," to a higher service, when Elijah cast his mantle upon him. He was there with a power that in railroad language we call 2-4-1, and for the benefit of those who have not worked with that power on the farm, that can be freely translated into two horns and four legs and one tail, which is the ancient and substantial power upon which modern progress depended for many thousands of years. In comparison with that and in listening to this address, we can see how far we have come because the service the speaker outlines indicates that with the enormous progress we have made in locomotive power, it will not be long before he will have to have a power to haul up around the Horse Shoe Curve of 2-20-2, and that is entirely within reach of present manufacturing progress and locomotive attainment.

Speaking of the general situation as described by the speaker I think there is entirely too much prominence given to these high-jackers in Congress. When Senator LaFollette ten years ago covered the country with his propaganda of the watering of stock of the railroads and put the country to a tax of hundreds of millions, as the speaker referred to, in the result of which he has been entirely discredited as to the foundation of his propaganda at that time, so that it is being shown, as the speaker so well set forth, that the values have been there all the time. With the increase in values that has come since, all those prophets of disaster have nothing left to stand on. For the very simple reason, as has happened this week in London, that when people of this class that bark and bark from morning until night are put in a place of responsibility and up against the management of that which they are criticising, it brings a sobering sense of responsibility, just as has been expressed by the new Prime Minister of England within the last 48 hours, and it is the same way with these people. The best employment for that class of men is to set them down to the responsible study of this problem and within 24 hours they will be converted to the importance and the necessity of care and attention to the problems that are pressing upon the public throughout the United States.

In addition to that I would also comment upon the remarks of both speakers in criticising the attitude of Congress as to lack of constructive legislation. There is need in other legislative bodies of constructive thinking. If there had been more constructive thinking in other legislative bodies outside of Congress I could say quite positively that there could have been several billions added to railroad balances. But it is an impressive memorial that the speaker has given us. The public generally does not realize the amount of investment there is in these railroad properties. We in Pittsburgh are particularly interested, and should be, because a simple calculation will show that if certain values in the city of Pittsburgh as they stand today were spread throughout the county of Allegheny, in line with the discussion we have had for many years of extending the city boundaries to the county line, if those values that exist in down town Pittsburgh were spread upon the same averages throughout the county of Allegheny, it would create a valuation which would practically equal the valuation of the railroads of the country which the speaker has given us tonight, because most of those assessments are away under what the real values are. And that is the future of this district, as I have prophesied on more than one occasion, in this Pittsburgh district, within the next 50 or 60 years, there will be a population approximating 10,000,000 people, which would be obtained by the average per acre population of the people of Pittsburgh as it was in the census of 1920, spread over the county in the same proportion.

And that is the problem that is to be worked out, as the speaker has indicated, by the careful thought and assistance of everybody in the Pittsburgh district. Therefore it is illuminating and instructive to have this matter come from the speaker, who has had this experience. And as I paid my respects to the speaker at the first meeting, I remarked that it was the practice of the Pennsylvania Railroad to send their operating officers here to Pittsburgh for their final polishing before they took them back to Philadelphia for permanent service, having such a facility in the Bluff for polishing purposes as they do not have in the city of Philadelphia. So, when the light is reflected in the proper manner, Mr. President, we can see that it was time for the company to return you to Philadelphia, because the polish is becoming more evident as the light is reflected. Although I have only seen the speaker in the press, by superficial inspection it would seem that we may congratulate ourselves on the happy prospect of having Mr. Lee with us for many years to come.

PRESIDENT: I thank you, Mr. Anderson, and on behalf of Mr. Lee. I know there are some here who were not here last month to listen to Mr. Fannon of the Sherman Service Bureau of Boston. I have not asked his permission but if he will be good enough to give us one of two of those thrills that he gave us last month—Mr. Conway suggests the football story—it would be very highly appreciated.

MR. S. F. FANNON: The sudden call upon me to say something causes me to feel a great deal like that story of the little nigger down in Tennessee. You remember the little nigger was very hungry. It had been many hours since he had anything to eat, and his stomach was crying out for attention. He decided that if he was going to get anything to eat he would have to catch it from the Cumberland River, so procuring some string and a pin from his pocket, he created some fishing tackle, baited the bent hook and awaited the call of some passing fish. But his waiting ran from minute to hours and with the passing hours came the ever increasing heat of the sun, which brought with it its drowsiness. Then he realized that he was up against it. He realized that he could not eat unless he caught a fish and he could not fish unless he stayed awake, and stay awake he could not.

He finally decided to tie the string around his toe, saying that if a fish bit the hook the tug on the string would pull his toe and that would awaken him. Thus he would be able to sleep and fish too. But the little nigger miscalculated for a great channel catfish came along, grabbed the hook and jerked the little nigger in under the water. After many bubbles he finally came up, wiping the water from his eyes and blowing it from his nose and mouth, and exclaimed, "For the Lord sakes, I can't tell whether this nigger is fishing or that fish is niggering."

Mention was made tonight of loyalty. I wish I had the power and ability to bring home to every man present the value of loyalty. If we could be loyal and instill loyalty into the hearts of the men we come in contact with, what a tremendous amount of trouble, worry and money we could save. I have noticed in my travels that a great many people who live in small communities register from a neighboring large city when they visit New York. I never did think much of that kind of person. I believe it would be a good plan for the citizens who live in those small communities to take up a collection and put the money in a bank, like Mr. Lewis's, and give a committee a check book on that bank, tell the committee to go around and see that fellow who is not willing to register from his home town, and who is not loyal to it, and say to him, "We understand that you are ashamed of our little village, at least your actions indicate this. We have come to ask you where you would rather live and we have taken up a collection to pay your expenses to move there."

This would cut down the population of the town some, I will admit, but it would improve the quality a whole lot. The same is true here tonight. You are railroad men, making your livelihood from the railroads. Certain things are necessary for the development of those roads and the only way we are going to procure them, if they are just, is by every railroad man standing four square for the railroads in his work and in his conversation. We are able to gather at such meetings as this tonight facts and enthusiasm because we come in touch with the directors and managers and hear the story from their lips, and we say that these facts should be brought before the attention of authorities in Washington. The attention of the Senators who make our laws should be called to it.

But men, let me say that I believe we missed the point. The railroads today have thousands of employes, in the shops, on the tracks and on the trains. And though they are part of our great system of railways, they are not able to get the correct point of view because they are not present at such meetings as this one tonight, where they can hear from the lips of their Directing Vice-President, Mr. Lee, the real facts about the railroads of which they are a part, yes, a most important part. And because they do not understand, they are not as loyal as they should be, and through their lack of loyalty we lose their suggestions for improvements, and their ability to help develop the railroad.

I think the important move is not to Washington or to the Senators but to the thousands of employes that they may get a clear understanding, and, through that understanding, a loyalty that will bring a deeper interest in their work and a larger return for their efforts. Let us adopt a system of telling these employes the facts, not by printed form, but by the spoken word, the personal contact. For it is through the loyalty of the managers to employes and employes to the managers, and both to the railroad that we will succeed in giving this country the best of service possible, to the stockholders a fair return on their investment, and to the managers and employes a just return for their efforts.

I am only too glad to comply with your request for me to repeat the football story.

(The speaker then repeated the football story which he gave in his address to the club last month, to the great enjoyment of the audience.

PRESIDENT: Mr. Fannon, we thank you. Gentlemen, Mr. Fannon's residence is in Boston but he thinks so well of us that he filed his application for membership in this club.

No doubt many others will talk entertainingly upon this subject. In order that they may do so, I will now offer them that opportunity. To undertake to call on the list of names I have before me would keep us very late.

MR. L. C. BIHLER: I do not want to talk more than an hour and a half but I do want to take this occasion to congratulate Mr. Lee upon delivering the best address of any new member that ever has been heard by this club. Mr. Lee's figures are very interesting. But Mr. Lee is conservative in his estimate of 49,844,000. He figures nine months of 1,000,000 cars a week. I want to bring that up to 1,000,000 a week by a process of deduction and elimination. Figuring on working days we can make that forty-nine and a half million cars cover 49½ weeks. The record of 1923 was approximately 10.4 per cent more than the year 1920. That is about 4,900,000 cars more in 1923 than in 1920; 4,900,000 cars multiplied by 37 feet per car, average, will give you 35,500 miles of [illegible] moving at the rate of 20 miles an hour, would require [illegible] pass a given point. So the railroads did stage a wonderful comeback.

I have lived at the transportation end of the car service business for a good many years and I want to offer this thought. Somebody under the initials of H. F. L. in the Railway Age about six weeks ago parodied this song:

"Yes, we have no car shortage,
We have no car shortage today,
We have carloads by millions
And ton miles by billions
And all kinds of freight, and say
We have no old-fashioned embargoes,
When it is loaded the car goes,
But yes! We have no car shortage,
We have no car shortage today."

PRESIDENT: Mr. Crawford, as my predecessor in the position of President of this Club, will you be good enough to add a little cheer?

MR. D. F. CRAWFORD: Of course, I cannot add anything to the excellent presentation of the railroad situation given by Mr. Lee, but the figure of $22,000,000,000 which he mentioned as the amount invested in the railways has given me a thought on somewhat different lines.

Who are the actual owners of this tremendous amount of property? I do not think that it is today made sufficiently clear that all of this capital is held by the people of this country.

Over $7,000,000,000 of it is owned by 777,000 stockholders directly and the remainder is included in the assets back of all of our individual life insurance policies and savings bank deposits.

It is certainly astounding to have presented to us the fact that our investments amounting to some $22,000,000,000 is in any way endangered by adverse legislation or unfair treatment of any kind and it would seem that we, as owners of this property, would make it plain to the Congress and other legislatives that our property must be given, not only an opportunity to function for its intended purpose, but also give us a fair return for the money we have advanced to the enterpsie.

Ordinary plain common sense would indicate that we already have ample legislation on most every subject. I am informed that in addition to the English Common law handed down to us we have about 2,000,000 laws, sixty-two (62,000) of which have been produced in the last five years, and that during this period 65,000 court decisions which, by the precedent set, create further complications, have been rendered and incidentally that a New York policeman, to properly perform his duty, would be required to have knowledge of about 15,000 laws. It would seem with all this, it would be possible to impose all the regulations of the railroads required to protect the public.

As owners of an investment of $22,000,000,000, growing at the rate of something like $1,000,000,000 a year, is it not too precious? Does it not mean too much to all of us to dismiss lightly? Should we not endeavor to impress on all those with whom we come in contact that the railroads are not owned by that mysterious place, "Wall Street," or any two or three or small group of people, but by everyone who owns a share of railroad stock carries a life insurance policy or has a savings bank account.

I think the Pennsylvania Railroad has something like 164,000 stockholders and I am sure that those 164,000 stockholders do not want anything to happen to the Pennsylvania Railroad which will depreciate the value of their stock. To me, this is bringing the subject right down to the individual pocketbook, including my own.

MR. EMERY: Mr. Fannon spoke about looking after the man with the overalls, bringing to his attention and getting him better acquainted with the propositions of the railroads. I think most of us see the trade papers offered to the railroads and see the propaganda that is going out there, but these trade journals do not reach many of the interested voters. The Pennsylvania Railroad has gotten out propaganda, in the form of little pamphlets, in the dining cars. These reach only a comparatively few. The President of the Illinois Central has gotten out a series of pamphlets, distributing them all over his territory, getting them to the farmers and business men along the road, and, I understand, has secured very good results and support from these people.

The newspapers publish everything that is given out by La Follette and these other men, and their whole basis of support is through the newspapers, and a lot of material that is printed by the newspapers is not based on knowledge of the facts.

I take occasion, traveling around the country, to talk with people, and I am surprised at the number of those who still take the interpretation of the Transportation Act that the railroads are given a guaranteed amount of money, that is, guaranteed by the Government a certain percentage of earnings on the valuation of the roads. This is firmly fixed in their minds. It has been misrepresented to them. Those are the people who are back of these Senators who are trying to force the railroads into Government ownership for their own political advantage.

The propaganda that is spread around, as I have said, by the railroads does not reach the people who are supporting La Follette and his ilk. Get at the individual voter with the propaganda of personal comparisons. For instance, the figure of $300,000,000 paid in taxes this past year is approximately $3.00 to each person in this country. There is something personal, something that appeals to the individual. The cost of coal, not totals, but reduced to per capita, and other such items are things to bring to the attention of the individual who is supporting these Senators. It is only by their support that such men are continued in Congress.

It strikes me that there is a great deal in the way of actual facts and figures that it is up to the major officials of the railroads to make a special effort to get before the average voter. It strikes me that it is up to the officials of the railroads to counteract this stuff which the newspapers are putting out to the non-thinking public for these Senators, and then Congress will take care of itself.

PRESIDENT: I wonder if it would be unreasonable to ask

Mr. Malcolm to speak. He gave us an inspiration after Mr. Fannon's talk at the last meeting and I know there are some here tonight who did not hear him on that occasion and who, I know, would like to hear him tonight. If it is not asking too much, I would like to give Mr. Malcolm opportunity to say a word.

MR. E. E. MALCOLM: Mr. President and Gentlemen:—I am not a public speaker. A question was asked at the last meeting that I did feel I could answer, and I believe I answered it. I had not thought to say a word when I entered the meeting. I was almost forced to do so because of the fact that a question was asked, which I believed I knew the answer. To be honest with you, I would much rather sit down this evening.

I am very much pleased at the address of Mr. Lee, our Vice President. I never attend any meetings such as this and listen to the remarks made by any of its members, but I get something good out of it. It often brings back to my mind some experience I have had during my railroad career, for I have been a railroad man for 26 years, and I am proud to be a railroad employe. I have had other service in my time. I was a journeyman moulder before I was 21 years of age. Necessity possibly caused that, for I had a good old Scotch father and mother, who raised eight boys and girls, and they needed my assistance, so I got down to business when I was 16 years of age. All the schooling I got was in the little old red school house on the hill. I have always been proud of those little American institutions. But my railroad life was the life that most appealed to me. It is the life I have been most interested in. I love an old engine, and that is the absolute truth. When an old engine starts off smooth and squeals, every revolution it makes it is a part of myself. I feel its every vibration. That is how I feel when I am at my regular work. That is my life. It is my ambition. It is myself. If a man loves his work in that spirit, he cannot help giving good service, regardless of what the work may be or by what corporation he may be employed. It is the spirit God wants to install in every man. If that spirit is not in you, or if it is not in you to the full extent, it is your fault and not the fault of your Creator .

I have other reasons for serving my country in the way I have always tried to do. Personal contact with a number of its officers, who were men promoted from my own rank, men in whom I have faith and for whom I have friendship and admiration, an experience I might some other time touch on, but not tonight.

I am glad we have got Mr. Fannon as a member with us. It shows that he found something in this Club at our last meeting that caused his heart to be touched. I am glad to see our Vice President a member. And above all, I am glad to be a member myself.

PRESIDENT: Mr. Lent, who has charge of our Speakers' Committee, has a very important announcement to make.

MR. JOHN F. LENT: I want to give you a little of the reaction I got when I invited Mr. Lee to come here tonight. We have all shown our appreciation of his being here and I want to tell you that when I first broached the subject, he was not at all hesitant about accepting. He said he was going to be very happy to be here and meet with us. So as you linger after the meeting, as many of you as can come up and meet him because his ambitions in coming to this meeting were not so much to get to talk as to meet with the members of the Club.

Another matter I want to mention. I presume only a limited number of you got to the Chamber of Commerce transportation meetings in Washington two weeks ago. I sat throughout those meetings and I got a great deal of valuable information. I shall not undertake to discuss any of those subjects tonight, but this thing I want to bring to you. We secured the Vice Chairman of those meetings for our official meeting next month, Hon. George Post, of New York.

PRESIDENT: Mr. Post is a member of this Club. Are there any others who would like to add to the discussion at this time?

MR. A. E. ANDERSON:: :The question of loyalty has been raised and Mr. Fannon referred to the practice of people from the surrounding towns going down to New York or Chicago and registering as from Pittsburgh. J believed in that story for many years. until we had a meeting here about a year ago, when they were attempting to start a movement for the consolidation of all the boroughs in the County with Pittsburgh. That came up as an argument, and that argument went very well until a gentleman got up and said: "I did that for years. I went to a certain hotel in New York that had a special room, for which I paid $5 a day. I went down one evening and there was a new clerk, and in some way unconsciously—unconscious cerebration, I suppose—I wrote my name. 'John Smith, Swissvale, Pa.' The clerk looked at it and said: 'Your room will be $3.50.' I saw a great light and ever since, when I go to New York, I live in Swissvale, Pa."

In addition, Mr. President, to your thanks to the speaker, I think we should have an expression from the Club, and being somewhat on the edge of the railroads and as a citizen of Pittsburgh, I will take this occasion to offer a motion of appreciation of the address of Mr. Lee and his coming before us, with the hope of many years' residence among us, and that we express our appreciation by a rising vote.

(The motion prevailed unanimously by all members rising.)

There being no further business, upon motion, the meeting adjourned.

J. D. CONWAY, Secretary.

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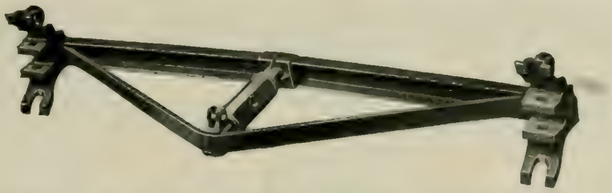

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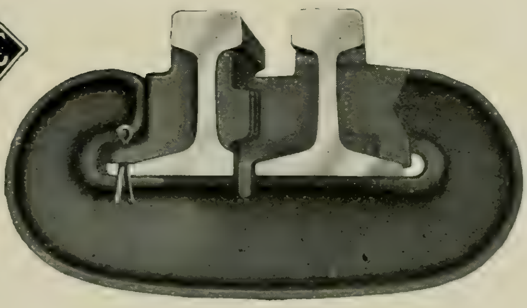

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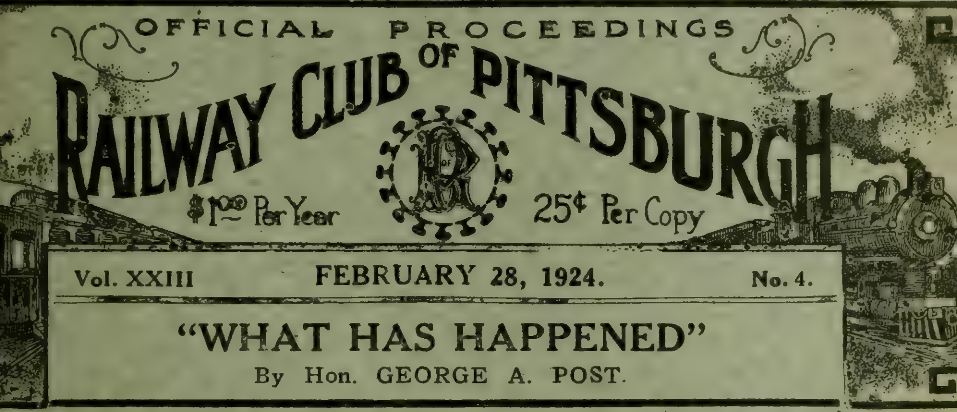

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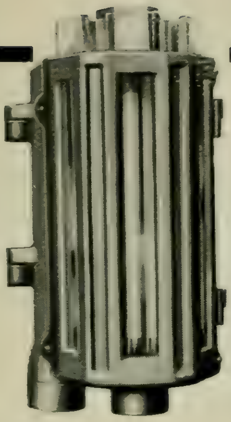

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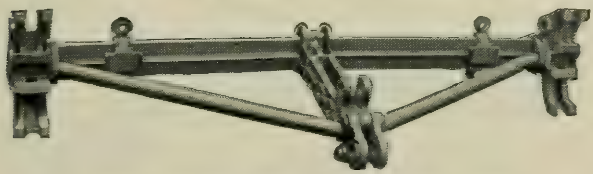

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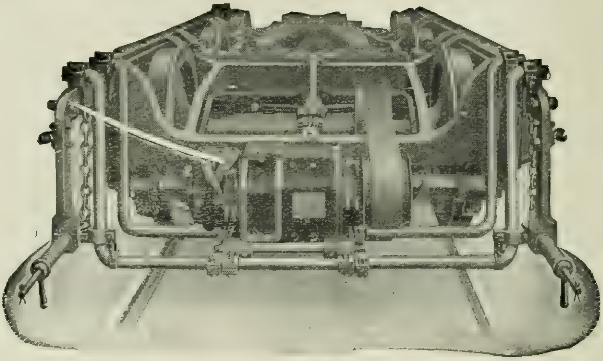

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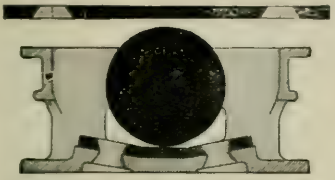

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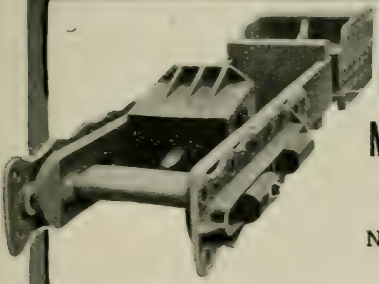

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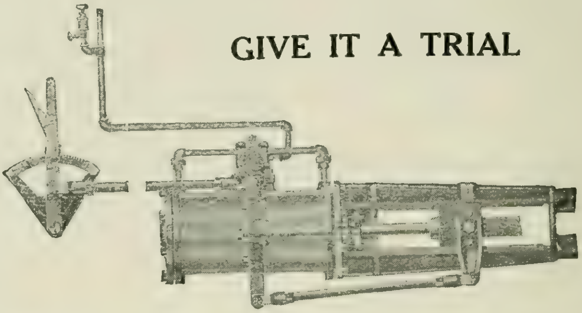

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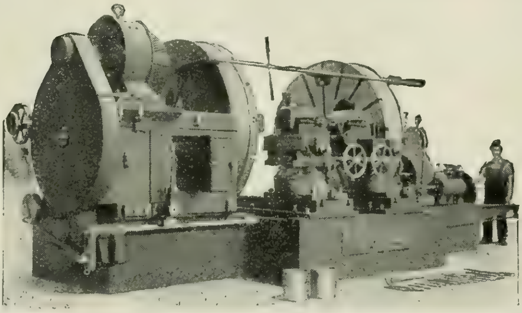

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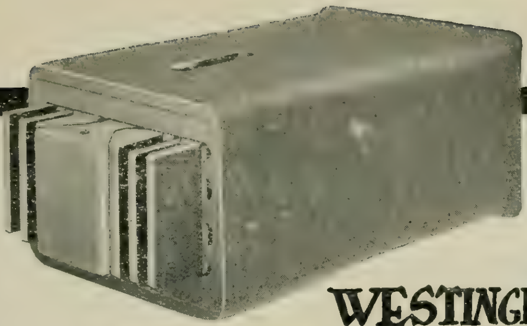

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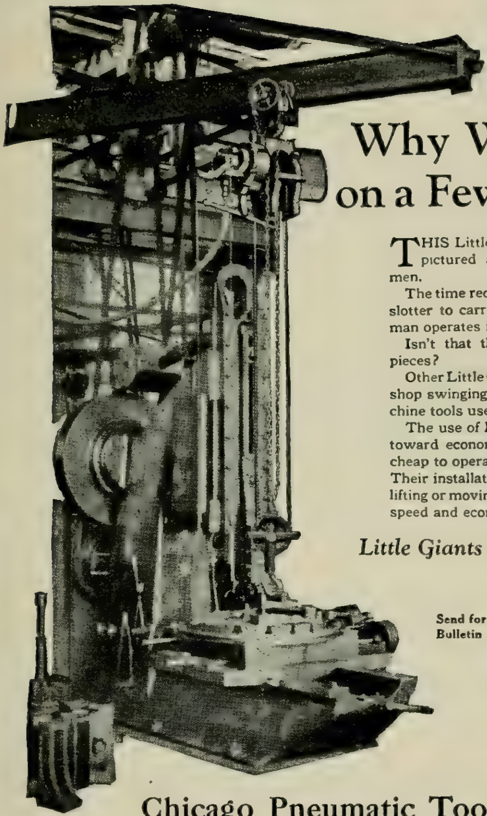

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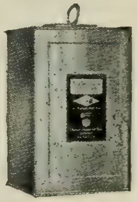

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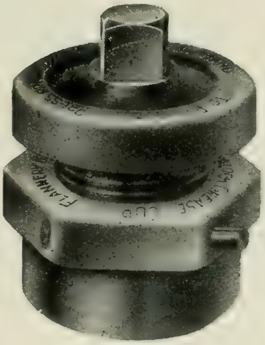

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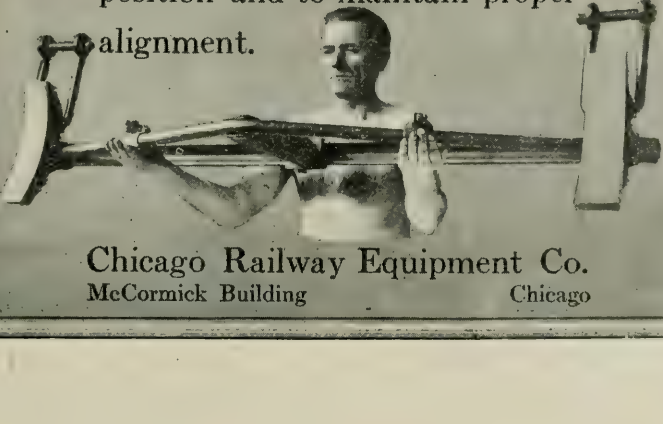

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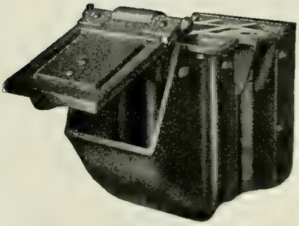

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No. 4
Pittsburgh, Pa., Feb. 28, 1924
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D. F. CRAWFORD	November, 1922, to October, 1923

*—Deceased.

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Peoples, J. S.
Post, Geo. A.
Proft, J. W.
Provost, S. W.
Rabold, W. E.
Ralston, J. A.
Rankin, B. B.
Raushcart, E. A.
Redding, R. D.
Renshaw, W. B.
Rick, R. C.
Rogers, Robert
Roth, Philip J.
Ryan, D. W.
Sage, R. V.
Scheck, H. G.
Severn, A. B.
Sheridan, T. F.
Shellenbarger, H. M.
Smith, John L.
Smith, M. A.
Smythe, W. C.
Snowden, H. J.
Snyder, J. W.
Spielman, J. A.
Stoller, Karl M.
Stucki, A.
Sutherland, L.
Thompson, A. W.
Thompson, L. D.
Timme, W. F.
Trueblood, H. J.
VanVranken, S. E.
Walker, E. H.
Walther, G. C.
Warner, E. O.
Webster, H. D.
Weissert, W. J.
Wells, F. H.
Willoughby, F. R.
Wright, John B.
Young, F. C.
Zilian, R. F.

VISITORS

Abel, J. L.
Bennett, T. W.
Bentley, W. F.
Boyden, J. A.
Burns, S. P.
Clifford, C. H., Jr.
Conner, F. W.
Cunningham, W. P.
Daddow, J. L.
Davis, Wm. B.

Elkin, W. A.
Fagan, R.
Felton, F.
Fowler, Geo. L.
Harris, A. R.
Hazen, H. M.
Hildenbrand, L. B.
Hyans, Harry W.
Jex, W. S.
Jungbluth, Herbert
Keebler, Dr. C. B.
Kelley, H. T.
Ketchpel, Paul A.
Kirkpatrick, W. R.
Larson, Soen
Leonard, P. J.
Lowery, Dr. Jos. E.
Luddy, W. E.
MacKenzie, J. R.
Mann, Nelson T.
Mays, Chas. B.
Meeker, Donald
Miller, A. E.
Miller, C. R.
Munhall, John
McIlvaine, C. L.
McIntosh, R. L.
Nelson, W. M.
O'Connor, M. J.
O'Donovan, M. C.
Orndorff, J. R.
Posteraro, S. F.
Riddle, D. E.
Ridgway, E. H.
Russell, W. C.
Schmitt, Wm. F.
Schrontz, S. B.
Schwer, L. D.
Shaw, Jas. B.
Sheasley, R. A.
Sherriff, C. F.
Sneck, H .
Swinson, Stuart J.
Thomas, G. P.
Ward, W. E.
Williams, Samuel L.

The call of the roll was dispensed with, the record of attendance being obtained through the registration cards.

The reading of the minutes of the last meeting was dispensed with, as they are to appear in printed form.

The Secretary read the following list of applications for membership:

Arenth, Jacob J., Clerk, B. & O. R. R., 13 Sycamore St., Etna, Pa. Recommended by J. A. Spielmann.

Baily, J. H., Secretary, Edgewater Steel Co., Oakmont, Pa. Recommended by F. C. Riddile.

Blake, T. W., Secy. to Vice Pres., Penna. R. R. System, Pittsburgh, Pa. Recommended by J. A. Ralston.

Booth, W. F., Supt., B. & O. R. R., 3510 Louisa St., Pittsburgh, Pa. Recommended by J. A. Spielmann.

Catt, Clyde E., Div. Accountant, B. & O. R. R., 408 B. & O. Pass. Station, Pittsburgh, Pa. Recommended by J. A. Spielmann.

Clifford, Charles H., Special Rep., Sherman Service, 6329 Walnut St., E. E., Pittsburgh, Pa. Recommended by F. S. Fannon.

Clinton, M. R., Supt. Car Service, P. & L. E. R. R., 624 P. & L. E. Depot, Pittsburgh, Pa. Recommended by D. J. Redding.

Dierker, R. H. L., Asst. Term'l Agt., B. & O. R. R., Grant and Water Sts., Pittsburgh, Pa. Recommended by J. T. Campbell.

Fisher, Edward C., Transp'n Timekeeper, B. & O. R. R., 4822 Monongahela St., Pittsburgh, Pa. Recommended by J. A. Spielmann.

Fritz, Roy, C. C., D. F. A., B. & O. R. R., 5904 Penn Ave., Pittsburgh, Pa. Recommended by J. A. Spielmann.

Hopkins, Geo., Boiler Foreman, P. & W. Va. Ry., 713 Idlewood Ave., East Carnegie, Pa. Recommended by Jno. L. Smith.

Horgan, Charles T., Supt. of Police, B. & O. R. R., Pittsburgh, Pa. Recommended by J. A. Spielmann.

Hyde, W. B., Agent, B. & O. R. R., 340 Craft Ave., Pittsburgh, Pa. Recommended by J. T. Campbell.

Keim, C. C., C. C., Agt. Jct. Tfr. Penna., B. & O. R. R., Thirty-third & Liberty Ave., Pittsburgh, Pa. Recommended by J. T. Campbell.

Keller, Edward H., Secy. to Supt., B. & O. R. R., 58 Natchez St., Pittsburgh, Pa. Recommended by J. A. Spielmann.

Ketchpel, Paul A., Engr. Dept., Loco. Stoker Co., 14 Montana St., Pittsburgh, Pa. Recommended by C. R. Davison.

Larsen, Jacob C., Asst. to Mech. Engr., The Buckeye Steel Castings Co., So. Parsons Ave., Columbus, Ohio. Recommended by J. D. Conway.

Leonard, P. J., Gen. Fore., B. & O. R. R., 5118 Duncan St., Pittsburgh, Pa. Recommended by J. T. Campbell.

Luddy, Wm. E., E. H. Fore., Penna. R. R. System, Pitcairn, Pa. Recommended by J. C. Dudley.

MacKenzie, J. B., Engr. Dept., Loco. Stoker Co., 132 First St., Aspinwall, Pa. Recommended by C. R. Davison.

Moore, Andrew B., Asst. C. C. to Gen. Supt., B. & O. R. R., 201 B. & O. Pass. Station, Pittsburgh, Pa. Recommended by J. A. Spielmann.

McGeorge, D. W., Sales Dept., Edgewater Steel Co., Pittsburgh, Pa. Recommended by J. A. Ralston.

Patterson, Harry W., Clerk, Union R. R., 1724 Aurelius St., Swissvale, Pa. Recommended by A. F. Coulter.

Perkins, H. E., Transitman, B. & O. R. R., 458 Hays Ave., Mt. Oliver Sta., Pittsburgh, Pa. Recommended by J. A. Spielmann.

Posteraro, S. F., Freight Cashier, B. & O. R. R., Grant & Water Sts., Pttisburgh, Pa. Recommended by J. T. Campbell.

Ringer, Elmer C., Asst. C. C. to Supt., B. & O. R. R., 4819 Monongahela St., Hazelwood, Pittsburgh, Pa. Recommended by J. A. Spielmann.

Roberts, James E., Clerk, Penna. R. R. System, 618 Marchand St., E. E., Pittsburgh, Pa. Recommended by Jas. G. Bennett.

Roddy, F. V. Supv'r Fuel Loading, B. & O. R. R., 207 Grandview Ave., Pittsburgh, Pa. Recommended by J. A. Spielmann.

Schmidt, William, Rodman, B. & O. R. R., 1719 Greenleaf St., Duquesne Hgts., Pittsburgh, Pa. Recommended by J. A. Spielmann.

Schramm, Ralph L., Rodman, B. & O. R. R., 401 B. & O. Station, Pittsburgh, Pa. Recommended by J. A. Spielmann.

Schwer, Leo D., Production Checker, Penna. R. R. System, R. F. D., Verona, Pa. Recommended by R. V. Headington.

Tipton, George M., Agent, B. & O. R. R., Braddock, Pa. Recommended by J. A. Spielmann.

Turner, E. Archer, Engr. Dept. Loco. Stoker Co., 5211 Stanton Ave., Pittsburgh, Pa. Recommended by C. R. Davison.

Ward, W. E., C. C. to Gen. Supt., B. & O. R. R., 201 B. & O. Depot, Pittsburgh, Pa. Recommended by J. A. Spielmann.

Yenger, James K., Clerk, Penna. R. R. System, 126 Charles St., Mt. Oliver Sta., Pittsburgh, Pa. Recommended by R. V. Headington.

VICE PRESIDENT: As soon as these applications have been approved by the Executive Committee, the gentlemen will become members upon payment of the year's dues.

Announcement was made of the death of Mr. Jesse R. Meade, Asst. Road Foreman of Engines, P. & L. E. Railroad Co., who died January 23, 1924, and Mr. Essex Thomas, Superintendent, Union Railroad Co., died February 18, 1924.

VICE PRESIDENT: Appropriate memorial will appear in the Official Proceedings of the Club.

The Secretary read a telegram from President Geo. D. Ogden expressing regret for his inability to attend the meeting and expressing best wishes for a large attendance in honor of the speaker, Mr. George A. Post.

VICE PRESIDENT: If there is no further business to come before the Club at this time, it will be my great pleasure to introduce to you the speaker of the evening. This is really not necessary, for he is, I am proud to say, a member of this Club and has been for over twenty years, in good standing, too. You all know he is a very busy man. He is a manufacturer, he is a lawyer, he is a statesman. And when I look at the attendance this evening I need say no more as to the esteem in which he is held by the members of this Club. He is to address us upon the subject: "What Has Happened?" I take great pleasure in presenting to you the Honorable George A. Post.

"WHAT HAS HAPPENED"

By Hon. Geo. A. Post.

Mr. President and Fellow-Members of the Railway Club of Pittsburgh:—It is probably not proper for me to move any amendment to anything that has been said by the presiding officer regarding myself preceding my arrival upon the platform. But I do feel that in justice to myself, and in justice to the truth, there ought to be an amendment to that part of the introduction by your President in which he described me as a *lawyer* and a *statesman.* It is true, and I confess it, I was admitted to practice as a lawyer when a youngster, but I am like what the little girl said about her father, when the minister came along to where she was playing in the street and asked her: "Little girl, is your father a Christian?" She answered promptly: "Yep, but he don't work at it." I particularly take exception to the idea that I am a *statesman,* because Tom Reed once said that a statesman is a politician who is dead. I offer myself in evidence, as Exhibit A, to prove that I am not yet dead by a *darned* sight.

All the same, of course, it is very pleasant for anyone to be so cordially greeted as I have been by you. I have just emerged from a little dinner at the close of which there was opened up a jug of verbal molasses, the content of which was poured upon my unprotected head until my hair was all sticky. I was literally drenched by the downpour of compliment, from the mouths of men who were saying awfully sweet things about me. Being human, I liked to hear nice things about myself. Regarding the truthfulness of all that was said, I hope to God Congress will not appoint any investigating committee.

It was a little over eighteen years ago that I last had the honor of addressing the Railway Club of Pittsburgh. After you have had such a nice, long rest from my vocal strenuosities, you must be thoroughly refreshed, so I don't propose to worry about how much of your time I shall occupy this evening. If I shall tire you somewhat, you can take another eighteen years for recuperation. By that time, my permanent address will not be known. If you, or those who shall survive this onslaught,, and live that long, should then again yearn for my presence, you couldn't reach me. And you could go on resting.

Just to cheer you up a little, I call to your attention a heartening fact. That wise, gallant, kindly and resourceful fellow-member of yours, my dear friend, Frank Lanahan, when he heard that I had been invited to speak before this club, so dear to his heart, jumped to the conclusion, from long acquaintance with me, that I would arrive in Pittsburgh with my mouth full of talk. Thereupon, Frank, animated by a humane impulse, proceeded with his far-famed finesse, adroitly to put one over on Astley Terry, whereby I was shunted into a Chamber of Commerce luncheon for a partial discharge of my lingual content. Frank figured, evidently, that what the Chamber got out of me at mid-day, you wouldn't have to get along toward midnight. So, you see, what I am about to hand to you is, in the parlance of George Ogden's band of traffic-getters: L. C. L.

It seems but yesterday—so well do I remember the lofty theme upon which I dwelt in somewhat fervent accents upon that beautiful October evening in 1905—that I stood before you pleading for a sweeter attitude toward the Railway Supply man, on the part of the railroad officials. You may not remember it, but I can never forget—for I said it myself—and we all know how impressive to ourselves are things we have said to others.

Having thus established a fixed date after which, down to the present time, there has been a succession of important events that have revolutionized the manner of doing things, my query is, as I again face the Railway Club of Pittsburgh: "What's Happened!"

This Assembly being composed of those who are closely allied in their daily lives with matters affecting railroad transportation, either in the operation of railroads, or in the manufacture and sale of railroad equipment, I shall, naturally, confine my remarks to what has happened in the railroad world.

In the interest of brevity, I am compelled, also, to eliminate all discussion or relation of the wonderful progress that has been made by railroad management in administrative efficiency, inventive ingenuity and technical skill, whereby the comfort and convenience of the public have been enhanced, and greater celerity and economy in the movement of the nation's tonnage have been attaind. That is a thrilling story all by itself.

My theme, in answer to my question as to "What's Happened?" treats of the change that has occurred in the attitude of the Railway Supply Men toward the railroads, the changes that have occurred in the attitude of government toward the railroads, and the change in the attitude of the railroads toward the public.

It was in connection with the meeting of the International Railway Congress, which was held in Washington in May, 1905, that the Railway Supply Men received their first recognition as a co-operative force, worthy of recognition, from the executive officials of the railroads.

The prospect for the Congress proving to be the brilliant event that the Railroad officials had hoped for, had waned sadly, until the thought occurred to some of them (and as it turned out, quite a happy thought it was), to appeal to the Railway Supply Men to see if they could do anything to save the Congress from the oblivion into which it was fast sinking.

Into the details of what the Supply Men did, responsive to that appeal, I shall not go further than to say that, beyond doubt, the International Railway Congress of 1905, with its visible and outward signs of splendor, established a high water mark for any such Congress ever held before or since. The imposing opening of the great Railway Appliance Exhibition, over the formal exercises of which George Westinghouse presided with stately dignity, which is yet vividly remembered in Washington, and by all who participated, was *some day* at the National Capital. At its close, Mr. Stuyvesant Fish, then President of the American Railway Association, called at the headquarters of the Exhibition Committee and said: "Gentlemen, the tail is waging the dog in great shape. I salute you!"

The Supply Men had for the first time all pulled together, and in their achievement they had conscious pride. But the most important thing that had happened, as a result of their united efforts, was, that, while working together, they learned to know and appreciate one another, and lasting friendships were formed between men who theretofore had viewed each other as comptitors without any common interest.

Up to that time they had not concerned themselves much about the fundamental economics involved in the building and operation of railroads. To sell to them was their desire and to fabricate the material they thought to be needed by the railroads, was the subject uppermost in their thoughts. Whether the railroads were doing the right thing by the public did not much enter into their calculations. If the railroads bought from them liberally, they were inclined to think they were; if they did not, they were inclined to have serious doubts about it.

They were soon to learn that they had a very vital interest in how the public felt toward the railroads. In that year of 1905 there were well defined symptoms of public wrath against the railroads, and proposals were under consideration in high and powerful official circles, presaging legislation intended to further curb their power, stringently restrict their freedom of action and reduce their revenues.

It is interesting to recall at this time that some of those who were called "Radicals" in that day, and who were insisting that the Interstate Commerce Commission should have more power in the matter of rate making, felt called upon to loudly proclaim that it was utterly beyond their thought or intention that the Commission should have power to initiate and actually fix rates—that being concededly the rightful prerogative of the railroads.

In 1906, as a result of agitation which was marked by fierce denunciation of many practices of the railroads, the Congress gave to the Interstate Commerce Commission the power to prescribe rates when, upon complaint, it adjudged the rates fixed by the railroads were excessive or unfair. But Congress did not, at that time, allow the Commission to bring the complaint itself. It was in that year that the Commission was empowered to establish a uniform system of railroad accounting, to which all railroads must conform.

But the hostility to the railroads was not appeased by the enactment of those measures. Indeed, it seemed as though the hatred by the public of the railroads increased in fury with each successive enactment of restrictive regulation, under the lash of anti-railroad oratory all over the country. A railroad President, during those days of frenzy, was pictured by violent hustings speakers as a monster who, denied justice to the shippers and who was deaf to all appeals for the alleviation of the evils afflicting the public. At the heads of railroad executives there were hurled invective and imprecation.

Then it was that the manufacturers of railroad materials and equipment saw that they had a duty to perform. They saw that they were the ultimate consumers of a public wrath which they had in no way incurred. They counseled together and finally organized, not as a militant, but rather as a liaison body, to eagerly seek a way to promote more friendly relations between the contending forces. They condoned no questionable practices. They strove earnestly for their abatement. They became students of legislative proposals. They sought audiences with lawmakers, not as lobbyists, but in the open, confining their efforts solely to averting catastrophe to the financial credit of the railroads, not alone for the preservation of their individual concerns, but because it was a matter of grave concern to all citizens.

No longer are the Railway Supply Men merely seekers after orders from the railroads, but wherever they are they are seekers after the truth as to the relations that should exist between government and the railroads. Their minds have been in attrition with other minds in other fields than their own. They have learned much from others; by others have they at times been persuaded to change their opinions. Also, by their sincerity of purpose and clarity of portrayal they have won converts to their views.

Out of all their experiences; out of all their studies, and all the knowledge they have gained thereby regarding the railroads, they have found a great truth that cannot be gainsaid. That truth is: *The people of the United States cannot have the transportation facilities they require, unless they are willing to pay for them. Without them disaster will overwhelm the country....* So, it has happened that the Railway Supply Men have shown themselves to the railroads to be friends in time of stress. All over the country you find them in their home towns members of local civic bodies cooperating for the public welfare. They are generous contributors to all movements having the purpose of finding out the facts in controverted questions of public policy. They are no lick-spittles of the railroads, but they are their friends, and are proud of it. They have had joy in their activities, which have been accentuated by their convictions that they have never advocated anything for the railroads that was not absolutely in the public interest as well.

Resuming now the recital of the progressive stages of governmental regulation of railroads, we find that from the date of the creation of the Interstate Commerce Commission in 1887, the powers of that body have been gradually expanded, by the so-called Hepburn act of 1906; the Mann-Elkins Act of 1910; the Panama Canal Act of 1912, and the Transportation Act of 1920, until its control over railroad revenues is complete. Its mastery over the railroads stands unquestioned. No one any longer contends that the conduct of our railroads is a private matter in which the owners have a right to do as they please. Yet that was once a doctrine strongly maintained. That the public interest is paramount is now universally conceded.

The public is mighty and has prevailed. Without doubt there are some regulatory restrictions that might advantageously be relieved of their rigor. To my mind the one great accomplishment of the regulatory era, which is of supreme importance for the welfare of the country, and which must be a solid satisfaction for those who are now operating the railroads so splendidly. And that is that the public mind is at rest regarding the possibility of questionable or provoking practices by the railroads. They simply cannot be done.

Safeguards have been created assuring absolute integrity in accounting. Watered stock is a thing of the past. Building of competing lines for sand-bagging and stock-jobbing purposes cannot be done any more. Rate wars between competing railroads are now impossible. Rebating with the nauseous evils following in its wake is in the discard. To the accomplishment of these ends public sentiment set itself the task and thoroughly it did the job. It may be that in the vigorous house-cleaning, some spots were scraped too thin, some prized antiques were broken or scratched, and some of the cleansing compound may have splashed on the pictures and draperies. It was a mop-pail and scrubbing brush crusade, not a feather duster invasion.

I shall simply mention in passing the World War period, during which the railroads were taken over by the Federal government, and operated regardless of all the regulations that had been piled up in the ante-bellum years. The railroads had to be used to do their share in winning the war, and therefore, they were unlimbered from all regulatory impedimenta. When the war was over the people at-large clamored for a speedy return of the railroads to their owners for operation. On every hand among those who ship and travel by rail, there was manifest a yearning for a return to the pre-war conditions, wherein somebody was interested in the prompt shipment and delivery of their commodities. They longed for the reappearance of the smiling, polite and eager railroad traffic representative who appreciated their needs for traffic facilities, and plead for the utilization of his particular line, to demonstrate how energetically and swiftly things could and would be done for them. They were tired of the impersonality of governmental service. They irked under the don't-care-a-damn-ativeness of the minion of government who had no urge to serve them graciously and quickly so as to win the approval of his vigilant boss. They had learned that *service*, above all other things, was of prime importance.

Again the voice of the public was heeded. Responsive to this public sentiment, federal control ceased on March 1, 1920, and since that time the railroads have been operated under the provisions of what is known as the Transportation Act of 1920. In the framing of that Act for the first time since 1887, Congress approached the consideration of railroad legislation entirely free from any spirit of antagonism toward the railroad. On the contrary, there was manifest a general desire to enact constructive legislation whereunder the railroads might prosper and be able to adequately perform their duty to the public. Profound study was made of railroad history in all the world. Committees of Congress listened intently to all who had constructive suggestions to make. Of course, there were wide differences of opinion among very able and experienced men.

It was my privilege to be an auditor at many discussions, a participant in many conferences, and an interested observer of the methods pursued by those who long labored to bring forth a plan whereunder government and the railroads might, under a new order of things, assume reciprocal relations conducive to harmonious, efficient and economical administration of our country's transportation agencies.

The point that I wish to emphasize, because it is especially germane to my central thought at this moment, is that the period of consideration of the statutory provisions, which eventuated in the *final* enactment of the Transportation Act of 1920, marked an era when prejudice against the railroads had largely subsided and a spirit of helpfulness and better understanding of the vital importance of adequate transportation facilities for the nation was apparent.

Even the present agitation for the repeal of the Rule of Rate Making, which has its clamorous advocates in the agricultural area of the Northwest, does not have its base in fury at railroad administration. It is because the farmers have suffered so much by the deflation of the prices of their crops as an aftermath of the war. They want the price of everything they buy, *including transportation,* brought down to fit the contents of their depleted pocketbooks. It is a cry for *help,* not a shout of anger.

Some of their ills they must cure by better methods of farming. It will take time for them to convince themselves of the error of their own ways. It will take time to learn and adapt themselves to improved methods.

Some of their ills arise from the conditions arising from the war, and nothing but a settlement of international affairs, will restore and stabilize their markets.

But, as they complain of the high prices they have to pay, their eyes are turned toward freight rates and they exaggerate the weight of the burden they imposed upon them. That is a matter they are told that they can fix quickly—Congress can do it for them. They are conscious of their great political power, and are not always wisely advised by those who seek their political favor. They know, if they stop to think, that the railroads have co-operated actively with the Interstate Commerce Commission, in large reductions of freight rates upon farm products, whereby the railroads reduced their earnings by many millions which they need very badly. Steeped in their miseries, which all people are anxious to have mitigated, they do not yet see that it would not help them, but rather would hurt them, if the railroads should be financially crippled and thereby be rendered unable to properly serve them. A cartoonist in a Chicago paper recently graphically portrayed the futility of crippling the railroads in an attempt to aid the farmers. He pictured a farm wagon with one of its wheels broken down, and the farmer coming across a field with a wheel he had removed from a freight car wherewith to mend his wagon. Study of the cartoon showed clearly that not only would the car wheel not fit the wagon, but the freight car could not move without the wheel of which it had been shorn.

Now I come to the consideration of an aspect of railroad affairs that is worthy of warm commendation and is receiving such commendation from those in high governmental station. I refer to the diligence and masterful ability shown by the management of our railroads in their efforts to serve the public to the utmost of their power. Not all of them are happy under the stringent regulations controlling their administrative efforts, and some very able men among them complain of the narrow sphere of initiative permitted to them.

But, all the same, both those who carry their burdens with a hopeful smile, and those who bemoan the conditions under which they labor, are leaving nothing undone that ought to be done, and that can be done, to meet the requirements of our expanding commerce. Of course, all of them could do more if they had the money or credit wherewith to do it.

It is interesting, admirable and greatly helpful to the railroad cause that so many of our railroad executives have become adepts in public speaking. What they say is listened to attentively and respectfully. They may well court publicity for the facts they relate. They have nothing to conceal. Whether they are orators or not, railroad executives of this day gladly respond to invitations to meet and confer with their patrons along their lines. Indeed, they devote a large part of their time in seeking to promote amicable public relations.

Practically all the railroad presidents of the present day have arrived at their posts of administrative authority within the past ten or fifteen years. Owing to the fact that they have assumed their duties during the time when government has been asserting itself more and more in the regulation of railroad affairs, they could not have the sense of deprivation of power once wielded, as did their predecessors. They took their jobs in full knowledge of changed conditions. Naturally, they want to make good, and they are making good as far as governmental restriction of their revenues will permit.

It is an interesting fact that the record shows that but two men who were Presidents of Class I railroads in 1905 remain in their positions today: Mr. W. H. Truesdale, of the Lackawanna, and Mr. F. D. Underwood, of the Erie. Two rugged veterans of the rail they are, and both came to the East out of the West. One, Truesdale, took over a property inherently prosperous with a long history of prudent, sagacious management, which he has with conscientious care conserved and strengthened by assiduous devotion to its every detail. The other, Underwood, came to the rescue of a decrepit system, which, under his untiring energy, resolute domination and broad vision, has become an important trunk line.

So, finally, in brief, the answer to the inquiry respecting our railroads: "What's Happened?" since 1905, is that the government has assumed complete control over their revenues, and, practically, over their disbursements as well. They are operated by the representatives of their owners, under a comprehensive system of governmental regulation.

Their future prosperity lies in the lap of the public will. They could not, as a whole, be better manned for operating efficiency than now. Shall this army of willing, able and experienced operators be permitted by government to press forward with full equipment and a well established base of supplies, to do valiant service for the public weal? Or, shall they be overwhelmed by the onrush of a flood of traffic with which they cannot cope, because of lack of facilities?

I am an optimist by nature, and somehow, I have an abiding faith in the sober second thought of the American people. They may be led astray by the whimsicalities of perfervid, illogical orators for a little while, but they soon get wise when they find that economic shoes that have been put upon their feet pinch and rub them sore, so that they can make no satisfactory progress on their journey toward prosperity.

Gentlemen, with all my heart, I thank you for your royal greeting and for your kindly attention, and I bid you good night.

VICE PRESIDENT: Gentlemen, we have listened to a most royal address, full of inspiration and information. I would like to call on a few of our members first, to give the others a chance to think matters over and to give us some of their own experiences which may parallel the thoughts of the speaker tonight. Mr. Crawford is always ready to tell us something of interest. May we hear from him?

MR. D. F. CRAWFORD: Mr. President and Gentlemen:—It is certainly difficult to say anything after the excellent address we have had from Mr. Post, who is so familiar with all that has gone on in the legislative line. His introductory remarks, however, recall to me a very pleasant occasion, the International Railway Congress of 1905. I remember very vividly what he said about it, because I happened to be there. I have had the pleasure of attending the Congress in Berne in 1910 and again in Rome in 1922 and will say, as far as exhibits and entertainment and pleasure are concerned, the Washington Congress still stands at the head.

As to the railroad situation, there is only one railroad situation now and that the one he referred to last. It is up to the public to get the kind of transportation they want. It is up to us as members of this Railway Club to point out to the people any of the fallacies of the kind of orators he called them. I might call them something else.

VICE PRESIDENT: We would like a word from Mr. Lee.

MR. ELISHA LEE: Mr. President and Members of the Railway Club:—After listening to the very delightful remarks of the guest of the evening, it would be almost an anti-climax to say much of what has happened. I prefer to refer to his last few remarks, what of the future? I want at this time to pay a tribute to the railway supply men. Never having been one of them, I can talk with perfect freedom. They have been a tower of strength in our recent years and I wish to say that it is my fond hope that the bond that binds the railroad man today to the supply man in the upbuilding of public opinion along right lines may ever grow in a strengthening and flourishing way.

As to the future, I have every optimism with our speaker this evening. I am a bull on the railroads and the railroad men of today as I am a bull on the American citizen of today. And when the American citizen knows the facts and has the facts explained to him, the decision of the great mass of our citizens will be along right lines. And I have the utmost confidence for our industry for the future.

VICE PRESIDENT: May we hear a word from Col. Milliken?

COL. JAMES MILLIKEN: Mr. President and Members of The Railway Club of Pittsburgh:—Marc Anthony, in delivering his famous address over the bier of Caesar said "The evil that men do lives after them the good is oft interred with their bones.' I think on the evil side of the ledger will be marked up a number of the names of our Presidents and Vice Presidents who call on me to speak. And I think it will be marked up on the evil side of my own ledger that I always respond whether I have anything to say or not.

It is very difficult to add anything to the wonderful address we have heard this evening by our esteemed manufacturer-lawyer-statesman. I am quite sure he has never been a politician. Politicians ar never modest. He has told us a great deal of the accomplishments of the Railway Business Association. We did not hear him say anything about the fact that he was the head of that movement and that it was due to his endeavors that the great part of their accomplishments was actually brought about.

The Railway Business Association has ever since its inception done a wonderful work for the railroads of this country, particularly in bringing before the public the vital questions of the day. This Association has had a material effect in the elimination of some of the evil laws, and in the passing of some of the good laws in connection with railroad operation.

We are all optimistic that this country is going to have a good year of business, and that in turn means that the railroads are going to have a good business year. It is now generally conceded that there will be no adverse railway legislation this year, and that in turn adds to our optimism.

VICE PRESIDENT: I am going to call on another gentlemen who may say he is no engineer, but I know better. And he knows the transportation end. Mr. Eysmans.

MR. JULIEN L. EYSMANS: The presiding officer has been very kind, but I assure you that if I should attempt to make an address here tonight after the admirable one we heard from Dr. Post, you might accuse me of something I heard of a while ago. It seems that a preacher went to an insane hospital to make an address. Seated on the front row was a man who kept his eyes glued on the speaker, his mouth open, listening to every word the preacher was saying. The preacher was very much impressed by this wonderful attention which he was receiving from this inmate. He assumed his words were making a great impression. After the address was over he noticed that this inmate went over to the superintendent and whispered something to him. So he went over to the superintendent and said: "I want to know what that man was saying to you." 'No,' he said, "I would not like to tell you." "Well, I insist; I would like to know.' "If you insist, I will tell you. He said to me: 'Superintendent, how is it that he is out and we are in?' "

VICE PRESIDENT: Is any one here from the B. R. & P. who will tell us what has happened up there? If not, I will call on one who will answer and who will tell us something, Mr. O'Donovan, of McKees Rocks.

MR. M. C. O'DONOVAN: Mr. Chairman and Gentlemen of The Railway Club:—I appreciated the address very much. It was very good. I do not know what I might say to this body of men here tonight. You have heard a splendid address from Mr. Post, a leader in affairs national and industrial, and I suppose political, too, from what he said—at least in statesmanship.

I have been impressed every time I have come among members of this Railway Club through the courtesy and the kindness of my friend, Mr. Lanahan, a man who dominates the affairs of Pittsburgh to a great extent, and I am always impressed with the appearance, the intelligence, the industry, the integrity of the faces that I see assembled in this audience. And I was glad to hear Mr. Post and Mr. Lee of the Pennsylvania, say that they had faith and confidence in American citizenship. I know of no reason why I should be called upon to speak except that I might be called a liason officer between those who do big things and those who do little things. I have spent the greater part of my life in McKees Rocks, surrounded by laboring men of that district and I presume on account of my connection and my association with those who do big things, that guide the affairs of the country, and with those who do the small things of every-day life, that I am called upon to speak on occasions of this kind. I congratulate you on having this Club, I congratulate you on the character of the addresses I have heard when I have attended meetings of this Club, and I would only make one suggestion, that relying on the Americanism of Americans, remembering that there are thousands and thousands of men who are vest-pocket editions of Abraham Lincoln and who have been born out in the country, in log houses, and have grown up filled with the spirit that animated the fathers in this country when it was still small, and if you go out and preach what you have heard here and repeat the good things you hear from the officers of The Railway Club, using your own judgment—I am not suggesting that because you are employed by a certain railroad and the president of that railroad makes a suggestion that you should adopt it forthwith—but I do ask you as citizens of this great country that it is your duty and your privilege to listen to these men and carry their words out on the highways and carry them out without prejudice. Be fair, be free and be manly.

And one other thought that has occurred to me. During the month of February we celebrate the birthdays of Abraham Lincoln and of George Washington and hear so many splendid addresses and remember the historical things we have read in our youth that tell us how Americanism was founded on a spirit of fairness and loyalty, from which we have gotten away to a certain extent. We begin to worship the men who have amassed great fortunes. I am not saying this with any desire to destroy or break down or with any animosity toward great wealth, but when George Washington founded America he founded it on the idea that one man is as good as another and that idea should prevail and should animate you and me and everyone else. If you go out and preach that doctrine to the multitude, the Socialists will soon pass away and the crisis that appears before you will soon disappear and all will be well and we will be surrounded by the right kind of citizenship and the character of legislation we want that is desirable for the progress of this country. The railroads must be treated fairly. The corporations must be treated fairly. Because if you destroy them you destroy the other industries that are dependent upon them. It is almost useless to say these things in a body like this, but if these doctrines were preached out in the district where I live, out in different localities where agitators feel that they are right, but I know they are wrong, it would create a great change. It would influence public opinion. And when exercising your privilege as citizens, always vote for the man who has faith, who has character, who has real 100 per cent Americanism. I thank you for your attention.

VICE PRESIDENT: It comes to my mind that there is another gentlemen here from McKees Rocks, Mr. Frank J. Lanahan.

MR. FRANK J. LANAHAN: Mr. Presiding Officer, with your kind permission, I would like to have you substitute Mr. McIlwain, of the Buffalo Railway Club, who, no doubt, will have more interesting things to say than anything emanating from me.

MR. C. L. M'ILWAIN: I stepped in here tonight as a visitor and I assure you that I have enjoyed the evening immensely. I do not know why Mr. Lanahan should call on me, because I have nothing to add to those you have heard this evening. I am very much interested in this Club because I have been connected with the Central Railway Club of Buffalo the past year, and I want to congratulate you most heartily on the wonderful turnout you have this evening.

VICE PRESIDENT: We are glad to hear from Buffalo and whenever you are in the city we shall be glad to see you.

There is another manufacturer here, Mr. Thomas, can we hear from you?

MR. G. P. THOMAS: I haven't anything to add, Mr. President. I am glad to have been here tonight, but I haven't anything to say except that I am always glad to see the railroad officials and the manufacturers co-operate. We have got to either stand together or fall separately.

VICE PRESIDENT: We have yet a few minutes and would like to hear from anyone else before I call on the gentleman from McKees Rocks. Mr. Bentley, has anything happened on the B. & O.?

MR. W. F. BENTLEY: Mr. President and Gentlemen: I think that question could be better answered by Mr. Spielmann, who has brought in so many names of the B. & O. members and vouched for them so well.

I happened in your city this afternoon on some business and your Vice President kindly asked me up here to hear Mr. Post. I feel that I have been amply repaid for my visit. I have had the privilege of hearing Mr. Post speak on many occasions, and it has been a wonderful inspiration to me to hear so able a man speak. And the other speeches that have been made this evening have been wonderful and the advice given, if practiced, should be a great aid to the railroads. I have had forty-two years' experience in the mechanical department of the railroads and my whole life has been trying to help the railroads. The railroads have done wonders for this country.

But in trying to speak after so many able speakers, and especially Mr. Post, whom we might consider the bull of the evening, reminds me that I am a good deal like the bumble bee and the bull in a California clover field. The bull was eating the clover and swinging his head this way and that, and the bumble bee was buzzing around him, annoying him a good deal. It annoyed the bull to the extent that he finally concluded to get rid of the bee and he made a grab at the bumble bee and swallowed it. The bumble bee said to himself: "I will get even with you. I will sting you to death." When he had lodged in the stomach of the bull, he found himself surrounded by so many fine clover blossoms that he concluded to sip a little honey from the blossoms. He gorged himself until he became sleepy and he went to sleep and when he woke up the bull was gone.

VICE PRESIDENT: Is there anyone in the audience who can beat that Mr. Spielmann, your name has been mentioned.

MR. J. A. SPIELMANN: Mr. Vice President, I feel very highly honored to be classed in with the statesmen and the lawyers and the manufacturers and the doctors. After the elegant and instructive address I feel better Posted. It seems to be the style this evening to tell a story and I had one, but since I arose I have forgotten it. As far as experience on the railroads is concerned, I have had a little of it myself in the last forty-four years on the Baltimore & Ohio, so I fully agree with our speaker in every way. Our road suffered the same as the rest of the railroads during the war, but it is coming out all right now in good shape. I do not know that there is anything I can add to what has been said, except I want to say the address this evening was delightful, on account of the simple language spoken in such deliberate and convincing manner that we all digested it as the speaker proceeded and did not realize an hour and a half had passed.

VICE PRESIDENT: May we hear from Mr. Anderson?

MR. A. E. ANDERSON: Mr. Chairman, I had hoped you would let me off for one meeting at least. We enjoyed a comparative illustration in the speakers address that was startling in a good many respects, and very comprehensive and very interesting when it will get into printed form. The surprise of the evening to me was when he said he had been with Mr. Lanahan since about 10 o'clock this morning, and as everything is "malleable" to Mr. Lanahan, I would rather have expected "Exhibit A" to be in the form of four malleable wheels with a truck attached and with a guaranty that they would run on forever like the brook, because the speaker says he expects to be here eighteen years from now.

I heard the address he refers to in 1905. The statement is somewhat different now from what he made it then, because, then he said he had been a lawyer and he had reformed. He did not go to that extent tonight. But the question he has brought up and illustrated tonight is wonderful in scope because it gives the information that is needed in these days to show how far we have come.

The farmer's question he spoke about, I often illustrate by an incident that happened at a big reunion in 1914, that we had of our schools out here about 20 miles. I was chairman of the speakers' committee and had arranged to get all the teachers who had ever taught the school in that district. And the teacher who had taught the school before I had was speaking of what had been done by the farmers of Clinton township. He said he had never heard of any of them going to jail or to the workhouse or to the poorhouse. As he left the platform I remarked to him that I could tell him why he never heard of any of the farmers being in the poorhouse; because I had been raised on a farm and had two brothers on farms at that time. I said the reason is this: that they are always going to the poorhouse next week and they never get there. That is an illustration that I have used a number of times because it illustrates the farmers viewpoint to a very great extent and those farmers out west are in exactly the same situation.

One point that is not stressed enough in this railroad discussion is, to my mind, the effect of railroad operation or service in the increase of values to the farms. The west could never have been built if it had not been for the railroad development that Mr. Post has described. In all this discussion, that is minimized to a great extent. If the farmers, who are logical and reasonable when the viewpoint is fairly put to them, understand that the very values they complain about, or lack of values, are far above the level they would have been if they did not have the railroads within two or three miles, and as compared with the small saving on barrels of Tariff Commission, that the farmers of Canada have taken the European market from the American farmers and flour makers. It was stated there that the Canadian farmer had produced wheat and the Canadian miller produced flour and delivered it at 77 cents a barrel less than what the American farmer can do. That is the competition he must meet from other channels. But the comparison of the whole situation, especially railroad business and the values they have created and figuring that for the eighteen years he speaks of, the national wealth of the United States has been multiplied at least five times if it were calculated on a basis of estimation such as are used in our taxable valuation in our country, and that depends entirely on the railroad service that has been given, because if you stop the railroads at 12 o'clock tonight, all these values would disappear immediately because there could be no use made of it. Therefore, the value of this address is to appreciate what wonderful growth of values has been developed in this country during these past eighteen years.

VICE PRESIDENT: It is getting late, so we shall have to fall back on McKees Rocks.

MR. FRANK J. LANAHAN: So frequently have you heard from McKees Rocks, that I do not hesitate to offer another substitute in the person of Mr. Frank W. Conner, Passenger Traffic Manager of the Pennsylvania Railroad. This gentleman has an apples or potatoes or bushels of wheat. The farmers' troubles are illustrated by just what is going on in Washington before the intimate knowledge of the subject we are discussing this evening, possesses wonderful oratorical ability and a genial personality that cannot help but impress his hearers.

VICE PRESIDENT: We will be pleased to hear from Mr. Conner.

MR. F. W. CONNER: I think that is rather an unfair advantage for McKees Rocks to take of me. I have cherished the friendship of Mr. Lanahan for many years. Last night my 4-year-old boy, just before he was put to bed, got up on my knee and with a philosophical glint in his eyes and a very sober mein, said: "Father, why did God make bears?" I ask you, why should I be called on to make a speech? The thought has been running through my mind as I have listened tonight, and as I listened today to the splendid addresses made by the guest of the evening, and as I consider the enormous part which the railroads play today in the national growth, how remarkable that growth has been in just two generations and how little we realize at times that it is only two generations since a road 100 miles long was considered a big railroad. I recall in that connection a statement made to me a few years ago by a man well along in years, who, in 1865, was the advertising agent and chief clerk to the General Passenger Agent and Factotum Extraordinary on what was then known as the Little Miami Railroad. That, as many of you know, is now a part of the Cincinnati Division of the Pennsylvania Railroad. In that day it was a separate entity. My friend used to paste on every bit of advertising that he used for his railroad this slogan, which he had developed and of which he was enormously proud: "The Little Miami Railroad, Cincinnati to Columbus, 120 miles, all under one management.'

I like the optimistic spirit here tonight. I am an optimist. I think one of the best stories illustrative of true optimism which I have heard recently runs something like this. An old darky in Virginia, having been convicted of murder and sentenced to be hung, was greeted on the morning of the execution by certain members of the court, including the judge who sentenced him, and the judge, who was a friend of the old fellow, said to him: "Is there any last word you would like to say on this solemn occasion before you pass on?" The old darky looked at him a moment rather soberly, and his face lighted up as he said: "Judge, this is certainly going to be a lesson to me.'

VICE PRESIDENT: Now can we hear from Mr. Lanahan?

MR. FRANK J. LANAHAN: "Well, this is certainly going to be a lesson to me." I was hoping that the bolt would pass by and leave me serenely alone. So eloquently has McKees Rocks acquitted itself this evening in the person of Mr. O'Donovan, that

I am fearful the other boroughs and townships adjacent to Pittsburgh may be envious.

The dominating note in all the speeches we have had tonight is optimism. It has been my personal observation that in recent years in meetings when the subject of transportation has been brought up for discussion, there has been a bitterness and a spirit of accusation which is conspicuous at this gathering by its absence. Tonight, the atmosphere is clear, it is decidedly different, and is it not well that we can come to that frame of mind. If the men who are dependent upon transportation for their livelihood, and those who earn their daily bread from the transportation systems, would only stop to realize that in their success comes good to us and in their hurt comes injury to our pocketbook, if the general public were to realize the great purchasing power of the railroads of the country and what it means to the mills and the foundries and the factories, how differently they might act. There is no need of appealing to your patriotism to foster the transportation system—your common selfish interests demand waking up to the serious effect upon industry. None of us translate the situation properly. We fail to understand the language of the other fellow. It reminds me of the brakeman on the B., R. & P. Railroad when the passenger emerged from the thick, heavily-ladened atmosphere of the smoking car, reaching the platform, breathed in the fresh ozone of the outside and filling his lungs, exclaimed to the brakeman: 'Isn't this invigorating?" "No, sir," said the brakeman, "this is Punxsutawney." That is a good illustration. We do not understand each other.

On the other hand, there are a lot of us who gain the information, but we fail to comprehend its significance. Stealing a story of President Barnes of the United States Chamber of Commerce, a little girl in school was asked to spell "judicious" and replied correctly. The teacher then requested that she use it in a sentence. After some hesitation, in a childish voice she piped out: "Ham and pork art not judicious." In this great country of ours, there are many who can, as a simile, spell "judicious,' but with a feeling that is no concern of theirs. They interpret it as applying entirely to the other fellow. Then there are others, who, by reason of the colossal amount inovlved, the figures are incomprehensible. If the average man was to eliminate the billions that so glibly roll from the tongue of the statistician and get down to mere dollars, he would grasp the subject much more intelligently. It seems to me if this problem of a guaranteed return on investment were considered as a store owned by individuals with a stated amount of capital invested and the risk assumed by the owners in the way of employes and wages, and they had to encounter the steadily increasing amount of taxes and there was an inflexible law that fixed the price of sales and had to contend with constantly raising salaries and increased cost of merchandise, how long would it be before the sheriff would supersede them as owner of the business? That is exactly the situation in the transportation business, but because it does not concern us individually and because it is in such colossal figures, we think somehow it will take care of itself. It will be settled only when you and I take the interest in it tha' our own pocketbook demands, and not until then.

I was particularly delighted with Mr. Post's talk. First, because I like George, he is such a delightful character, spending his days for the benefit of his fellowmen secondly, because of the great grasp he has on his subject thirdly, the manner in which he presents it, with that unlimited vocabulary that drips so pleasingly from his silver tongue. Again, I am delighted to hear him get some additional titles. I have heard him called pretty nearly everything under the sun, but tonight he was called "Doctor." That's a new one To my knowledge, he has been a General, a Colonel, a Congressman, a Lawyer and everything but a horse thief.

There was one dominating feature of the discussion tonight, and that was the grasp of the subject by all the speakers. I do not believe that in the recollection of any of the old-timers of the Club, they have had every member get up and exhibit an interest in and a knowledge of the subject, such as they have tonight. Particularly pleasing was it to hear from one of the position of Mr. Lee speak so optimistically of the future. I think he belongs to that class of railroad men mentioned by Mr. Post. The solving of the difficulties is in good hands when men of that type are looking after affairs.

Now one remark on my favorite subject, The Railway Club. If anything was needed to bring home to the attention of the assembled multitude here tonight, the value of this democratic organization, you have had it supplied. When you look around and see who is your neighbor, and observe all these representative American citizens, whether a worker or a boss, an employe or an employer, a mechanic or an executive, a clerk or a superintendent, all in a common interest and for a common purpose and with the sincere desire to solve something for the benefit of mankind. Gentlemen, it is our wish that organizations of this kind will accomplish the great good of which they are capable, and they will do this, if everyone will help.

As the evening wanes and the hour has arrived when some of our members have to catch trains, I am going to move that we express our sincere appreciation of the delightful, thorough, instructive, and most helpful address that was made by our fellow-member, the inimitable General, Colonel, Doctor and wonderful orator, George Post, and that a compliment be paid the gentleman by a rising vote of thanks.

(The motion prevailed unanimously by all members rising.)

There being no further business, upon motion, the meeting adjourned.

J. D. CONWAY, Secretary.

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Died, January 23rd, 1924.

ESSEX THOMAS
Died, February 18th, 1924

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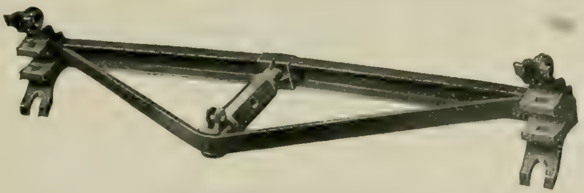

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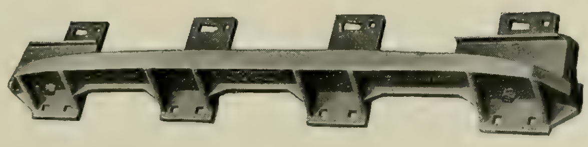

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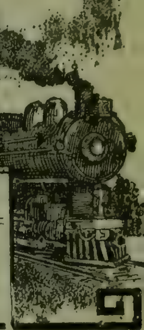

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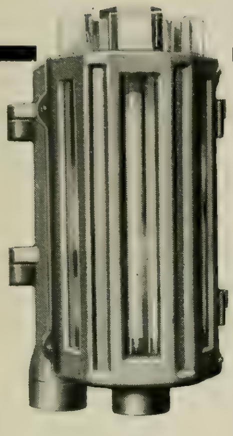

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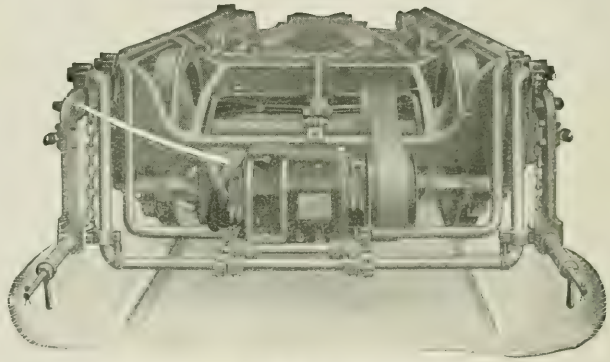

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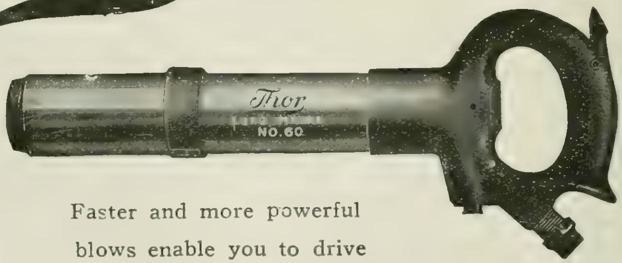

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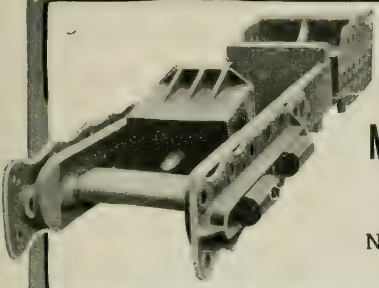

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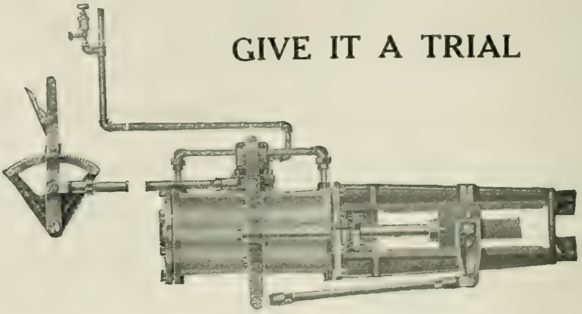

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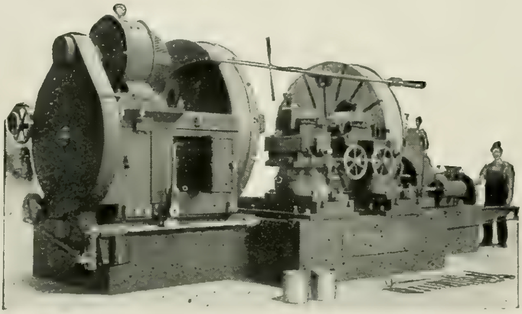

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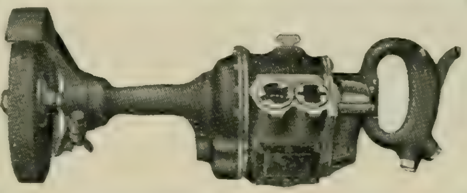

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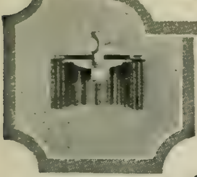

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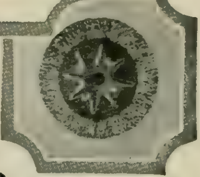

End view of radial Steel Wire Brush.

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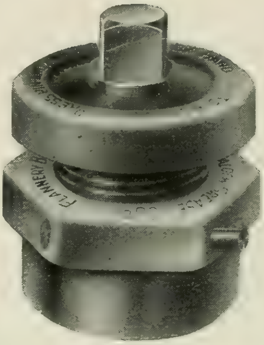

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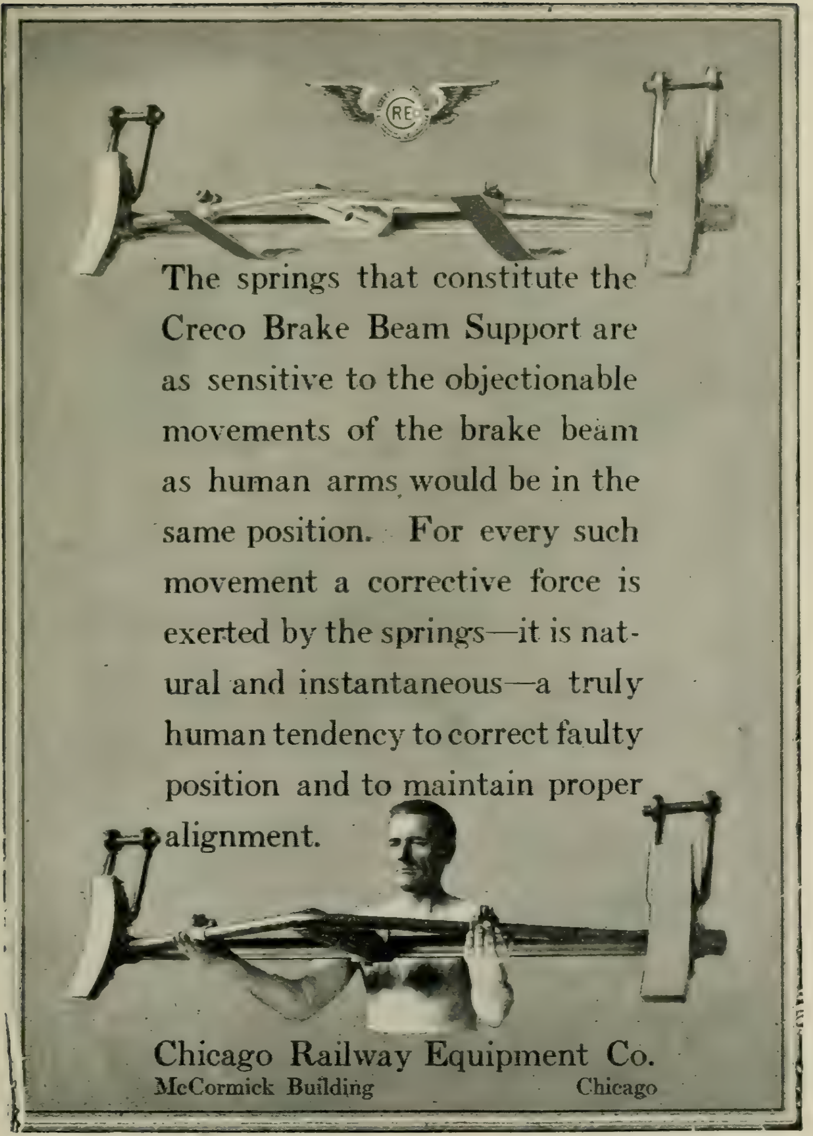

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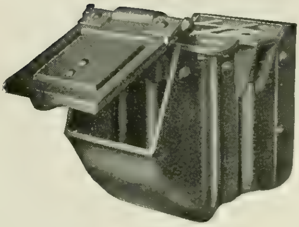

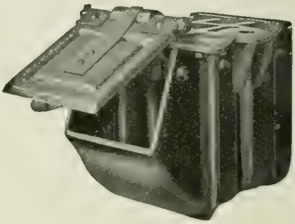

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Vol. XXIII
No. 5
Pittsburgh, Pa., Mar. 27, 1924
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*—Deceased.

Meetings held fourth Thursday of each month except June, July and August

PROCEEDINGS OF MEETING

March 27, 1924

The meeting was called to order in the Fort Pitt Hotel, Pittsburgh, Pa., at 8 o'clock P. M., President Geo. D. Ogden in the chair.

The following gentlemen registered:

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Lilley, C. S.

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Schrecongost, C. P.
Scott, J. C.
Seibert, Wm. L.
Severn, A. B.
Shannon, David E.
Smith, John L.
Snyder, J. W.
Snyder, Joseph
Spielmann, J. A.
Steigerwald, H.
Stucki, A.
Shellenberger, H. M.
Staman, Harry Z., Jr.
Tate, R. G.
Thompson, L. D.
Stamets, Wm. K.
Timme, W. F.
Trueblood, H. J.
Tucker, J. L.
VanVranken, S. E.
Watts, J. J.
Weissert, W. J.
Wells, F. H.
Williams, L. N.
Winslow, Sidney H.
Wright, John B.

VISITORS

Anderson, J. C.
Bard, F. W.
Bosley, R. K.
Bowery, Frank J.
Brunner, Emil E.
Brown, James C.
Cooper, F. E.
Crotty, J. F.
Davey, W. E.
Davis, Wm. B.
Buzzerd, J. P.
Caldwell, W. H.
DeLeon, Paul
Flood, Walter G.
Follett, W. F.
Jex, W. F.
Johnston, N.
Jungbluth, Herbert A.
Keane, V. M.
Kerr, Richard
King, W. N.
Link, Elmer
Lowe, F. B.
Mann, Nelson T.

Markley, Milton
Mitchell, W. S.
McCully, Dudley L.
McElvany, A. B.
McKown, H. P.
McVicker, C. L.
O'Connor, C. D.
Rhine, Chas. J.
Richardson, Geo.
Sarline, A. B.
Sayre, F. N.
Schauble, Chas.
Stewart, S. E.
Tate, Paul R.
VanBlarcon, W. C.
Vogel, H. E.
White, C. M.
Wilcox, L.
Williams, S. L.

The call of the roll was dispensed with, the record of attendance being obtained through the registration cards.

The reading of the minutes of the last meeting was dispensed with as they are to appear in printed form.

The Secretary read the following list of applications for membership:

Bollinger, W. A., Asst. Foreman, Boiler Shop, Penna. R. R. System, Seventh St., Verona, Pa. Recommended by R. V. Headington.

Buzzerd, J. P., Signal Supervisor, B. & O. R. R., 318 Rochelle St. Knoxville, Pa. Recommended by J. A. Spielmann.

Carlson, Frank R., Sales Dept., Chicago Railway Equipment Co., 500 Rwy. Exchange Bldg., Chicago, Ill. Recommended by Jno. L. Smith.

Carroll, J. H., Jr., Gen. Frt. Agt., B. & O. R. R., 921 Oliver Bldg., Pittsburgh, Pa. Recommended by J. A. Spielmann.

Deghnee, R. P., Salesman, Bethlehem Steel Co., 1807 Oliver Bldg., Pittsburgh, Pa. Recommended by J. D. Conway.

Dietz, W. P. Gen. Mgr. of Sales, Byrne Fuel Co., 1507 Oliver Bldg., Pittsburgh, Pa. Recommended by F. H. Freshwater.

Dunn, Thomas A., V. P. and Gen. Mgr., Consolidated Ice Co., Thirteenth and Pike St., Pittsburgh, Pa. Recommended by D. J. Redding.

Fitzpatrick, M. W., Train Director, B. & O. R. R., 212 Second St., Aspinwall, Pa. Recommended by C. H. Durant.

Gross, Jas. C., Asst. Gen. Frt. Agt., B. R. & P. Ry., 325 Wabash Bldg., Pittsburgh, Pa. Recommended by E. J. Devans.

Hickling, F. G., Mgr. Transportation Div., Westinghouse Elec. & Mfg. Co., Union Bank Bldg., Pittsburgh, Pa. Recommended by H. G. Huber.

Johnson, George T., Chief Engineer, The Buckeye Steel Castings Co., So. Parsons Ave., Columbus, Ohio. Recommended by J. A. Ralston.

McGann, Chas. E., M. M., B. & O. R. R., 138 Tecumseh St., Pittsburgh, Pa. Recommended by J. A. Spielmann.

Pfahler, F. P., District M. M., B. & O. R. R., B. & O. Station, Pittsburgh, Pa. Recommended by J. A. Spielmann.

Reddie, Wm. W., Asst. to Mgr. Industrial Sales Dept., Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa. Recommended by J. R. Sloan.

Riddle, D. E., Train Dispatcher, P. & W. Va. Ry., 347 Wabash Bldg., Pittsburgh, Pa. Recommended by R. L. Barrett.

Robinson, G. P., Asst. Sales Mgr., American Locomotive Co., 30 Church St., New York City. Recommended by Henry F. Gilg.

Sawyer, R. W., Sales Mgr. Penna. & Ohio Lumber Co., 1505 Oliver Bldg., Pittsburgh, Pa. Recommended by F. H. Freshwater.

Trainer, M. N., Sales Engr., American Brake Shoe & Fdry Co., 30 Church St., New York City. Recommended by J. A. Ralston.

Ufer, C. E., President, Penna. & Ohio Lumber Co., 1504 Oliver Bldg., Pittsburgh, Pa. Recommended by F. H. Freshwater.

Winslow, Sidney H., Service Engineer, Franklin Railway Supply Co., Inc., 2012 Kennedy Ave., Baltimore, Md. Recommended by R. M. Long.

PRESIDENT: As soon as these applications have been approved by the Executive Committee, the gentlemen will become members upon payment of the years dues.

We will proceed to the program of the evening. We have the great pleasure of having with us Mr. G. A. Richardson of the Bethlehem Steel Company, who will favor the Club with an address upon the subject, "The Manufacture of Solid Rolled Steel Car Wheels."

THE MANUFACTURE OF SOLID ROLLED STEEL CAR WHEELS

By Mr. G. A. Richardson, Manager, Technical Publicity Department, Bethlehem Steel Co., Bethlehem, Pa.

Few buyers and users fully realize the immense amount of work and special equipment required in the making of many more or less common, every-day steel products. The finished article frequently appears to be so easy to make that little thought is given to what lies behind.

At first thought it may seem that the buyer and user is little concerned with what goes on behind the scenes, as it were, and that as long as a given product measures up to specifications and price, that is as far as the interest need go. Yet, as a matter of fact, it is probable that no other one thing is a more prolific cause of increased costs and poor deliveries than lack of knowledge of this kind.

The subject of the manufacture of solid rolled steel wheels is one of especial interest to railroad men not only because the product is one in such general use but also due to the fact that more and larger equipment is needed for the manufacture of wheels than almost any other single specialty. Furthermore the type of equipment used is not frequently encountered.

Fortunately for the steam railroads, though the particular subject in hand gives an excellent idea of some of the problems of manufacture, standardization has immeasurably simplified the problems of buying and selling in the case of this particular product. Nevertheless the conditions encountered are typical and it serves as an especially good example because of comparisons that can be made.

Several years ago the statement was made at a meeting of one of the Electric Railway Associations that while the steam railways of the country were adhering to about nine types of wheels for their rolling stock more than 360 types were in use on the electric lines. Though some improvement has been made since that time the situation is still relatively unchanged. Now let us see just what a condition of this kind means to all concerned.

Multiplicity of types increase manufacturing costs and consequently selling prices while at the same time satisfactory deliveries, in the case of the special types, become more difficult. In considering the facts in hand they must be viewed from two angles: First, that of the practicability of carrying a stock of material or equipment on hand and, secondly, what is involved where small lots of varying designs must be made. While the details in the method of making rolled steel wheels vary somewhat with the different manufacturers, the essential conditions remain the same. Hence though the writer speaks from the practice of his own company, the problems involved apply in a greater or less degree to all.

Delivery times are influenced: (1) By the ability of the manufacturer to stock rough or finished material; (2) by the practicability of stocking special equipment, and (3) by the time involved in changing equipment, more particularly with reference to the resultant hold-up in production, especially during the busy periods.

Extra costs are determined: (1) By the increased overhead resulting from the necessity of carrying large and expensive stocks of special equipment such as dies, rolls, etc. (2) by the necessity of making modifications in epuipment on hand or building new; (3) by the actual time and labor involved in changing dies, rolls and other parts, and (4) by the reduction in average daily production necessitated by changing dies, rolls, etc. This is not only a question of the financial loss due to the actual reduction in output of wheels but also entails the losses due to large amounts of expensive equipment and machinery lying idle and increasing the proportional overhead.

There is only one way in which a thorough understanding of how these various elements enter into consideration can be gained and that is by starting in at the beginning of the manufacturing operations and following through step by step.

The start of the operations consists in taking sink head ingots having a cross-section 22 in. square and rolling them down in a 32 in. mill to round blooms having a diameter of 11 in. or 15 in., according to the size of the wheel that is to be made. These in turn are sheared into blocks of the desired length.

Right here at the very beginning the first difficulty is encountered. The blocks must be cut for a given type of wheel and are suitable for no other. This means that stocking, which facilitates the getting out of orders, is of necessity limited to a narrow range of the more commonly used sizes of blocks and, as a matter of fact, more than 5,000 tons of these latter are kept on hand. For the special types of wheels, however, it becomes necessary to roll and shear to order, which of course is a source of delay under the most favorable conditions and may involve extra expense.

In the conversion of the block into the rough finished wheel, there are five distinct operations and three heatings involved, as follows:

(1) First Forging. Blocks are brought to forging temperature and forged under 12,000 ton press.

(2) Second Forging. After a wash heat, blocks are submitted to a second forging under a press of similar capacity.

(3) Punching. The hub is punched.

(4) Rolling. The blanks are given another wash heat and then rolled in the mill to the final dimensions.

(5) Coning. Finished wheel is coned or dished to desired shape under large forging press.

After these operations the wheel is ready for hot bed, hot bed inspection, machining and final inspection.

The basic equipment for performing these operations includes pumps, hydraulic presses, heating furnaces, special wheel mill, machine tools, etc. The special equipment includes dies and rolls.

A full set of dies and rolls for one type of wheel involves an outlay of about $3,500.00. This may be modified somewhat, depending entirely on the differences in the design of the wheels. Any change in diameter or width of rim of wheel necessitates a complete change of dies throughout with the single exception of those used on the punching press. When the diameter and rim width remain the same, the hub diameter or rim thickness vary a change of die plates is necessitated.

The problem of stocking dies and parts is no small one in itself. At the plant under consideration more than 2,200 tons are carried in stock, the greater part of which are idle most of the time because of their special nature.

The layman is not apt to realize the number of parts that are necessary in making the changes in set-up for a given type of wheel. More than twenty-five separate parts are involved weighing from a few hundred pounds each up to as much as 6,000 lbs. Twenty-two of these for one type of wheel are illustrated. From these figures it can be seen that the time element involved in making a change of these is a very considerable one. The total weight of a set of these parts runs in the neighborhood of 40,000 lbs. or 20 tons.

Some typical examples of time required for changes follow:

(1) First forging. Services of four men, including crane man, and ½ hour's time required for change of dies.

(2) Second forging operation. Same crew and time.

(3) Punching. Few changes and little time required. Press operator, two helpers and about 15 minutes.

(4) Rolling Mill. Complete change of rolls requires about 1½ hour's time.

(5) Coning Press. Same as for 1 and 2.

(6) Machining and Inspections. A small loss of time, more noticeable in the case of short runs.

Even when dies and rolls are not completely changed, the time lost will amount to nearly as much because parts have to be loosened and removed.

While the figures given show some of the time and labor involved in changing equipment, the most important figure has to do with the reduction in output. Under average working conditions it is safe to say that die changes will cause a loss of 10 to 15 per cent in the output, a figure which is not a small one by any means and which very definitely influences costs.

A stock of wheels is a splendid thing from the standpoint of ability to make very prompt deliveries but no manufacturer can afford to carry a wide variety of types and sizes. At the plant described from 5,000 to 7,000 tons are regularly carried in stock in standard sizes and these can be bored to meet customer's requirements. But such stock does not take care of the many special types which are encountered.

A talk such as this is not merely a brief for the manufacturer; it is of far greater importance to the buyer and user because it shows that arguments for standardization and for placing of sizeable orders at one time are not merely selling talks. They are intended to help the consumer and simplify his own problems. Furthermore, though the steam railways are fortunate in having solved the problem to a large extent as far as wheels are concerned, it should not be forgotten that there are many other cases where it is not so, and that is the main object of the presentation of this talk, aside from its general interest, namely, to show why it pays to adhere ot standard practice as far as is compatible with practicability and progress.

EDITOR'S NOTE—Owing to the amount of ground covered by Mr. Richardsons talk it has been decided to reproduce only that part which dealt with the manufacture of solid rolled steel car wheels.

Mr. Richardsons original subject was the mining and transportation of raw products going into the manufacture of steel. This phase of the talk was fully described and illustrated with the aid of four reels of moving pictures, all taken on properties owned or controlled by the Bethlehem Steel Corporation.

The first part showed the Mahoning Mine at Hibbing, Minn., located in the Messabi Range, which is an excellent example of the open pit type of mine. This pit, together with the Hull Rust mine, which adjoins it, forms one of the largest open pit iron mining operations in the world.

The immense size of the mine (the Mahoning mine itself is two miles long by one-quarter of a mile wide and three hundred to four hundred feet deep) ; huge steam shovels having a lifting capacity of ten tons at each shovelfull used in loading the stripping dirt and the ore itself ; and other interesting details of the work involved in getting ore out of a mine of this character were graphically depicted.

In direct comparison were the pictures which followed, showing shaft mining operations on the properties of the Bethlehem Corporation at Vulcan, Mich., in the heart of the Menominee Range. A general view of the property and the hydro-electric plant, located on the Menominee River, which develops power for the mine, and many scenes taken both above and below ground gave a splendid idea of how shaft mining operations are carried on. The deepest shaft on the property at Vulcan is about 1,700 feet deep.

The transportation of the ore itself presents many features of interest. From the time the loaded ore trains left the mines at Hibbing and at Vulcan the ore was followed until it was delivered at the manufacturing plant. Equipment used in loading the boats and that used in unloading the ore boats stands out in startling contrast to the primitive methods used fifty years ago.

At Johnstown, Penna., the Bethlehem Corporation has one of the largest bituminous coal mines in the country operating through a single opening. In this mine there are more than fifty-five miles of main heading tracks and a dispatcher is required to handle the trips. Seventy pound rails are used in the main haulage and thirty-five ton electric locomotives haul trips of one hundred and forty-five cars. The coal is loaded and unloaded with the most modern automatic equipment and, for coking purposes, is washed in a coal washery which is the last word in plants of this type. For coking purposes the coal is mixed with other coal of a high volatile content and is then taken to the coke ovens for use in the blast furnaces, together with a large variety of other by-products.

Pictures of the new Rosedale By-product Coke Plant just completed at the Johnstown works about a year ago were used to illustrate this part of the talk.

Mr. Richardson showed two reels of moving pictures featuring every step in the manufacture of solid rolled steel wheels. This is a phase of steel manufacturing which is not as familiar to outsiders as some of the more ordinary rolling mill methods. A full description is given in these proceedings.

PRESIDENT: On behalf of the Club, I desire to thank Mr. Richardson for this very interesting and instructive talk. Are there any persons who have questions they would like to ask Mr. Richardson, or is there to be any discussion of any of the features of this interesting subject?

Some one suggested that I should say something on the subject of freight rates at one of our meetings and I have prepared a few notes, more or less interesting probably. Because of this very interesting program and the lateness of the hour, I will ask the Secretary to include the notes in the Proceedings and at one of our later meetings if any one of you should wish to discuss the subject or to ask any questions I shall be pleased to answer them as far as I may be able.

We will now take up the discussion of this very interesting talk by Mr. Richardson. It has been my pleasure to go through the plant that was illustrated in the pictures and tainly congratulate Mr. Richardson upon his very clear presentation of the subject.

MR. A. E. ANDERSON: Mr. President, I would like to ask the question as to what theory Mr. Richardson can give us as to the deposit of such a quantity of ore in such a pure state because prior to its discovery the low grade of the ores would have prevented such progress in the steel industry as we have at the present time. I would like to have his statement as to the comparison with what it would have meant had we been obliged to depend on the low grade ore that the steel industry depended upon before this discovery.

MR. G. A. RICHARDSON: From a geological standpoint there are a number of theories as to the formation of these ores. Insofar as the steel industry is concerned, it must be remembered that they are a very high grade ore which is economical to mine and convert. At the same time the high grade ores are being rapidly exhausted and we have nothing near the high iron contents that we had a few years ago.

I do not know exactly just what to say on the subject off hand. The immense quantity of available material has been a bigger factor than anything else, together with the additional factor of ease of getting the ore out and the low cost of recovery.

MR. A. E. ANDERSON: When these deposits are exhausted what will be the future of the ore supply?

MR. G. A. RICHARDSON: It is claimed that about 4% of the earth's surface is iron in one form or another and with the available deposits in sight we do not need to fear much as to their exhaustion for a long time to come. Furthermore, there are lots of ores which today are not worth recovery and which will be worth while recovering when it becomes necessary to have them. As long as other ores can be obtained more cheaply, such deposits will not be touched. The whole questions resolves itself into one—as to whether or not a given ore can be economically utilized under existing conditions.

VICE-PRESIDENT A. STUCKI: Our President very much regretted that he had to leave to make his train.

Mr. Richardson may have some interesting information about the machining of these wheels. The point I want to bring out is this: I understand they are machined off with very heavy cuts, possibly over ¼ in. This more or less tears the material. I have heard of cases where it tore the steel more than ⅛ in. Bearing that in mind, I was wondering whether you had any data as to how deep those tear crevices may extend into the tread of the wheel. You cannot see them but they are there.

MR. G. A. RICHARDSON: I am afraid that is a point I cannot answer.

VICE-PRESIDENT: Possibly some one else has had some experience in machining these wheels with heavy cuts.

Are there any other questions? If not, there is a lunch awaiting us. However, before we adjourn I want to say that Mr. Ogden, our President, deserves a great deal of credit for his interest, enthusiasm and devotion to our Club. To come here from Philadelphia to attend one meeting is certainly proof of what I have just said and we all appreciate it very much.

Is there anything further?

MR. HENRY F. GILG: When I was introduced to Mr. Richardson I told him that I had cut my business trip short by a week so as to be present tonight. While this, of course, is not strictly true, nevertheless I am glad that I could be here and I thank him personally as well as offer, on behalf of the Club, a vote of thanks for his very fine address.

(The motion prevailed unanimously by all members rising).

There being no further business, upon motion the meeting adjourned.

(Owing to the extensive program for the evening the President refrained from oral presentation of the following paper):

FREIGHT RATES, PAST AND PRESENT

PRESIDENT: Fellow Members of the Railway Club of Pittsburgh:

The suggestion has been made several times that the members of our organization might be interested in a discussion of the present freight rates in this country, how they came into existence, and the principles upon which they rest. The subject is more than interesting, it is intensely important to every railroad man and indeed to every citizen. But it is also amazingly complicated and intricate. I cannot hope to do more than merely touch the surface here and there.

The number of individual freight rates in effect in the United

States at the present time must be reckoned in the millions. Each of these rates is a price quoted for a definite and distinct service. There are also in effect in this country a great many millions of other prices besides freight rates. As a concrete example, let us take all the retail prices in effect, at the present time, in the department stores of our large cities. If anyone asked how the prices which are currently being charged for the articles sold over the counters of these stores came to be just what they are, the answer would be that they represent the interplay of countless economic and social forces which it would be utterly impossible to untangle individually.

It would be further explained that in the end these forces find general expression in the law of supply and demand and in the principle that consumers of anything must in the long run pay all costs, including the necessary cost of capital used in the production and distribution.

Substantially the same answer applies to freight rates, with this important difference, that at the present time, owing to governmental regulation, the play of economic forces upon them is artificially modified, which is not true of retail prices in general. Nevertheless during the formative period, when our freight rate structure was taking its present shape, rates were almost as freely subjected to economic and social forces as other prices and grew up in practically the same fashion.

There are certain broad facts about our freight rate structure which I assume all of you know, at least in a general way, but which I will briefly recapitulate. For rate-making and other traffic purposes the railroads are regarded as naturally dividing themselves into three groups: Eastern, Southern and Western. The Eastern group, in which we are located, takes in roughly the portion of the United States lying east of a line drawn through Chicago and St. Louis and north of an irregular line extending from St. Louis to Cincinnati and thence to the Port of Norfolk. The northern boundary is the Canadian line and the eastern boundary is the Atlantic sea-coast.

This region embraces the eastern half of what we call the Central West, all of the Middle States, including Maryland and Delaware, most of West Virginia, a considerable part of Virginia, and all of the New England States. It is the richest and most thickly populated portion of the country and has the densest and heaviest railroad traffic.

The region traversed by the Eastern group of lines in turn is separated into three rate-making sub-divisions. These are: (1) Central Freight Association territory, which lies west of Pittsburgh and Buffalo; (2) Trunk Line Association territory, which lies east of Pittsburgh and Buffalo and west of the Hudson River, but includes Long Island; and (3) New England Freight Association territory, which takes in all of the New England States.

The Southern and Western groups of lines are similarly sub-divided for rate-making purposes, but owing to the greater sparsity of population and traffic, the sub-divisions in most cases are of much greater extent.

So much for the territorial bases of rates. From the financial and economic viewpoint two general considerations govern. The first of these is that the freight rate structure as a whole must be remunerative; that is, it must bring in sufficient revenue to pay all of the costs of operation, all taxes, all rentals, all interest on borrowed money and yield a fair and adequate return upon the capital actually invested by the owners or stockholders.

The second consideration is that the burden of producing adequate total revenue must be distributed among the various classes and forms of traffic, in accordance with their respective abilities to pay. It is utterly visionary to attempt making individual rates on any such basis as cost of service plus a stated profit. In the first place no one can say with any accuracy what the real and ultimate cost of a given service is. The matter is far too complicated to be expressed mathematically. All attempts to segregate and apportion costs involve many assumptions which are for the most part purely arbitrary and which, in the opinion of the best judges, have little if any practical value. The true basis is the distribution of the burden in accordance with ability to pay. This has been crudely expressed in the past by the words "What the traffic will bear," a phrase which ignorance, misunderstanding and evil intent have distorted into false meanings which have done the railroads incalculable harm.

Nevertheless that phrase expresses a principle which is basically correct and sound, and instead of shrinking from it or denying outsiders its existence, we should rather endeavor to educate ourselves to an understanding of its real meaning and importance.

"What the traffic will bear" does not mean "all the traffic will bear." It means that raw materials should pay relatively low rates to encourage production, and that highly manufactured and expensive articles may well pay relatively high rates because the freight on such articles is a negligible factor in the cost which the consumer must bear. It means that generally speaking the rate per ton mile on any commodity or classification should decrease as the length of the haul increases. This is not only for the purpose of recognizing the relatively high terminal costs of the shorter hauls, but also to make possible the diversification and spread of industry and agriculture over the entire extent of our great country, in this way mitigating the tendency to excessive concentration of people and industries in limited areas. It means also that when two producing centers are, or properly may be, in competition for a given market, the rates between them may, with justice, be substantially equalized, although the distances may vary considerably.

These are, of course, all very general statements and there are many exceptions to them, but they outline the broad economic principles upon which freight rates have largely grown up. Their influence, to be sure, has been more or less modified from time to time by changes in the practical conditions of trade and commerce. For example, the ordinary commercial fluctuation of traffic frequently shifts the relative volume of tonnage as between different commodities transported in one year compared with another. Moreover, climatic conditions as well as commercial disturbances may tend to deprive the railroads of formidable sources of revenue without any mitigation of expense in the upkeep of the transportation facilities. Political and social conditions entirely outside our country may also have similar effects. A concrete example may be found in the decrease of the export grain traffic during 1923, when foreign shipments fell to extremely low levels. Yet the immensely expensive elevator facilities of the railroads, built at the seaboard and elsewhere, for the purpose of handling this traffic had to be maintained and kept available for future use. These and similar factors and conditions all have their bearings upon the general freight rate structure which, as I have stated before, must be so arranged as to yield total revenues sufficient to meet all the operating and capital expenses of the transportation industry.

We have heard and read a great deal in the past about alleged high level of freight rates and their supposed effect upon the cost of living and the business of the country in general. Much, indeed, it is not going too far to say most, of this is misleading and mischievous—some of it, at least, designedly so. There are three perfectly sound and incontrovertible proofs that the freight rates in the United States cannot as a whole justly be regarded as too high:

The first is that in the last fifteen or sixteen years the railroads have earned less than an average of 4% on the investment in their property, which demonstrates that freight rates have not adequately responded to the increasing costs of operation which have characterized most of that period.

The second is that in 1923 when the railroad plant was operated to capacity and with the greatest efficiency ever known, the return was only about 5% and fell considerably short of the 5¾% mark set by the Interstate Commerce Commission, which surely no one could call excessive.

The third is that under our existing scale of rates, the Nation last year did the greatest volume of business on record and the railroads successfully carried the greatest volume of freight in their history, while there cannot be the slightest question that the country as a whole, and its citizens individually, enjoyed the most widespread prosperity and attained the highest standards of living which have ever been reached in this or any other nation.

A structure of freight rates under which this is possible surely cannot be sweepingly condemned as restrictive to business or destructive to prosperity.

It is surely encouraging to note that the public generally is beginning to appreciate this fact and is showing unmistakable signs of tiring at the outcry against the freight rates of American railroads. They are learning that the effect of rates upon the flow of traffic and upon prices has been vastly exaggerated and are beginning to appreciate what is of immensely greater importance, viz: the burden of living costs resulting from our wastes in methods of distribution from Governmental extravagance, and from excessive and inequitable burdens of taxation.

It should not be understood that our structure of freight rates is perfect. It is far from that, although the injurious effects have been tremendously overstated. The freight rate structure is criticised at times upon the ground of inconsistency. Some of the criticisms are sane and temperate, and, as such, are justified. Others are extravagant. We can afford to admit that there are inconsistencies in our freight rate structure, and also that they should be remedied in a sensible, orderly and intelligent manner. They are not, however, fatal to the country or its welfare as our overflowing cup of national prosperity abundantly testifies.

Before we can deal with its inconsistencies we must have a real understanding of the circumstances under which they arose. To do that we must go back a good many years to the time when the railroads of this great country were in their first stages of construction, when they were reaching out into virgin territory, opening up lands for the development of agriculture, and preparing the way for the great cities and industrial centers which were to follow and have been so pre-eminently realized.

If you look into the transportation history of those days, you will find that freight rates were based upon the only rule which could govern under conditions existing at that period—the rule of practical expediency. They were established to meet the conditions and necessities of business as it then existed, including unrestrained competition between the railroads themselves. The primary purpose was to get business for the roads on terms which would make them pay, if not then, at some future day, but what was of greater importance, to induce the business man, farmer, investor and builder to patronize the railroads in the development of the Nation.

It is easy to see that under those conditions no mathematical basis of rates could be applied to the then infant industry of railroad transportation.

As time went on and the country became more developed and large towns and cities grew up, the method came into existence of making and controlling rates by districts or sections. They still continued to be framed on the basis of practical expediency, with a view to reaching levels which the public would regard as fair and reasonable so as to encourage the growth and interchange of traffic and the upbuilding of the territory through which the lines operated.

This is how the rate structure of the United States had its inception and how it has come down to us in the present day. When railroads were in the making, and even for many years after that period, when they were in a state of considerable development, there was practically nothing known of the present scientific methods of studying and dealing with business and commercial problems. Therefore, it may be freely conceded that the present structure of rates is not to any great extent mathematically or scientifically consistent.

It was under this form of rate structure, however, that the country reached its present industrial and commercial status. Our vast and populous manufacturing and trading centers have grown up at various points throughout the country in locations which were determined very largely by the nature of the original rate structure. In the same way agricultural development has proceeded in accordance with rate schedules which rendered competition possible between widely separated producing fields. As has already been indicated, rates were framed with the general thought of diversifying the business of the country and allowing various sections to have at least a fair and reasonable share of the total commerce and production as is proven daily by primary articles of commerce passing each other, moving in opposite directions on the main arteries of the Trunk Line railroads.

Now we have a population of more than 110,000,000 people scattered over thousands of communities and producing districts in this vast country of ours, whose respective geographical locations and individual success have been determined very largely by this rate structure, which has gradually grown up in the manner I have attempted to outline. Admitting that the structure is far from perfect, and has many defects which ought to be and can be corrected can we afford to go ahead with violent and subversive changes which may upset the welfare of communities and investments of individuals in established manufacturing enterprises?

It is proposed by some well-meaning people that in the midst of this complicated and widely related situation, we can formulate a few mathematical yard-sticks and revise all rates in accordance with them. It would be very easy, perhaps, to do this on paper, but disastrous to do it in actual practice. Wrong relationships in rates undoubtedly exist and we should proceed to make them right, but we ought to go about it cautiously and in such a manner as to avoid disrupting the general business and commerce of the nation. We must particularly avoid seriously disrupting the competitive relations between great producing and consuming centers which have been built up under the old rate structure. If we do not use care in this respect we shall inevitably jeopardize the means of livelihood of millions of people.

Suppose, just for the sake of illustration, that all rates were to be readjusted on a purely mileage basis so that the rate on any given product or commodity from one point to any other point would be strictly proportionate to the distance. I think there are some people in this country who believe that some such system should be put into effect. What would happen?

One of the first things would doubtless be that most manufacturing businesses would have to be moved into the territory in close proximity to the coal regions as manufacturing at any considerable distance from the mines could not be carried on in competition with people who paid little or no freight on fuel.

Farmers would have to crowd into the immediate vicinity of large cities, abandoning the cheap and productive lands at remote distances. Farm lands in the sparsely settled sections of the country would become practically worthless and those around the great cities prohibitive in price.

What would happen to the cost of food? It would, doubtless, rise immeasurably because of the increased costs of production resulting from the competition for nearby land, and I think that in the midst of this price inflation our citizens would forget entirely what the freight rates might be on the articles constituting their daily needs.

Of course, no one expects that a revision of freight rates would be attempted in any such bald manner as just outlined, but this is merely taking an extreme illustration to show the dangers resulting from applying purely mathematical yard-sticks to this extremely complicated question without giving proper consideration to the practical, economic and social problems which immediately confront us whenever we attempt to change materially the national freight rate structure.

The Chamber of Commerce of the United States not long since appointed a special committee, consisting of business men of National reputation to consider this whole question. One of their most important conclusions was as follows:

"Viewed as a whole, railroad rates in the United States are not unreasonably high, either as compared with pre-war rates in relation to general price levels, or as compared with foreign rates. They have afforded the railroads an average rate of return considerably below that which the Interstate Commerce Commission, acting in accordance with the law, has determined as fair. They do not, as a whole, hinder the processes of production or distribution. The present problem is one of better adjustment of relative rates, not a general reduction of all rates."

One of the most important things to bear in mind in considering this whole question is that the reasonableness of any given freight rate depends not only upon what it actually is in dollars and cents, but also, and in even more important degree, upon how it is related to other rates. Shippers almost invariably approach the discussion of rate problems with the fundamental premise: "It is of no consequence what the rate is, just so I'm on as favorable a basis as my competitor." Our chief problem, therefore, is to correct the wrong relationships which exist in the rate schedules not to reduce the net earnings of the railroads, which should always be sufficient to provide a proper return on capital, support adequate credit, and so furnish a basis for future transportation progress.

We do need certain changes in the distribution of the burden of rates. Some groups of rates are higher than the commodities or products affected can properly afford to pay. Others are lower than the products or commodities affected should pay in order to contribute their proper and fair share to the cost of rendering the nation's transportation service. Just what these changes are is a matter of expert knowledge and experience to decide and their determination should be left to skilled and experienced railroad and business men, who are not actuated by selfish and narrow motives, but who really understand the necessities and limitations of transportation and commerce.

As a practical matter, it would seem that the work can best be done by conscientiously undertaking, in an orderly manner, the necessary adjustment of those rates which genuinely require revision downward, trusting to the capitalization of public good-will and prosperity to assist us in avoiding too radical action in dealing with rates of the opposite character that is those which are perhaps too low, but upon which, nevertheless, extensive industries have been built up. Such a course will have the great advantage of minimizing contests on every hand and avoiding the creating of prejudice and ill-will on the part of shippers affected.

If we proceed to revise our rate structure in that manner and upon that basis and do so with the realization that patience and time will be required to complete the process, we shall meet with success, and there seems every reason to believe that the thinking business men of the country, and the vast majority of our farming population, who are of equal intelligence and foresight, will want to see it done that way. We can have a better rate structure than we have now and one which will possibly provide for even greater freedom of trade and commerce than at present, and at the same time not only protect but strengthen and permanently upbuild railroad credit, which you will agree is one of the most vital necessities for our country's continued welfare and progress.

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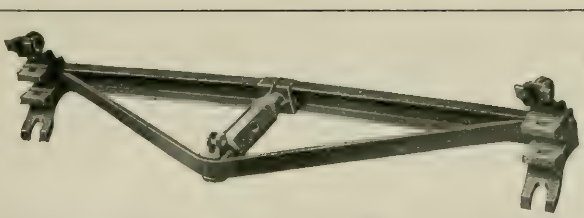

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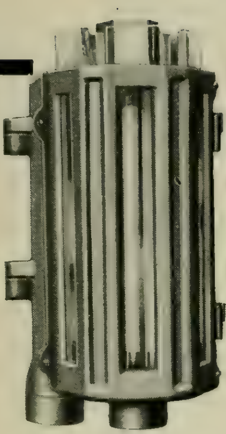

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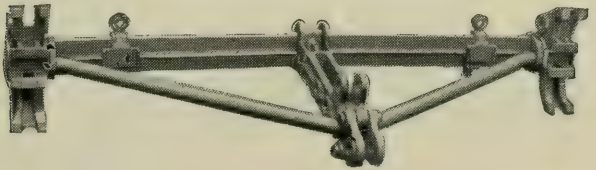

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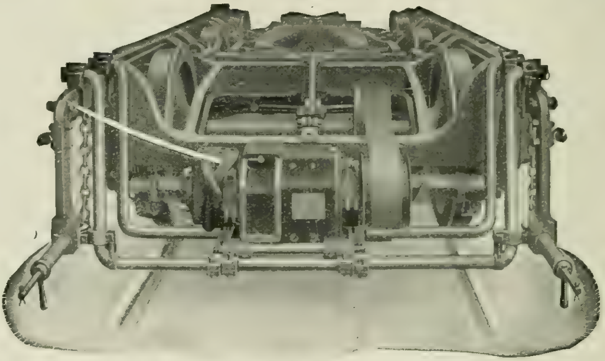

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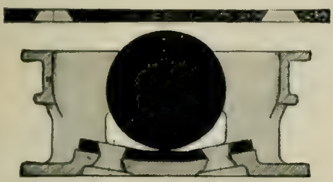

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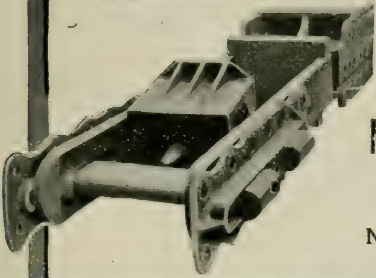

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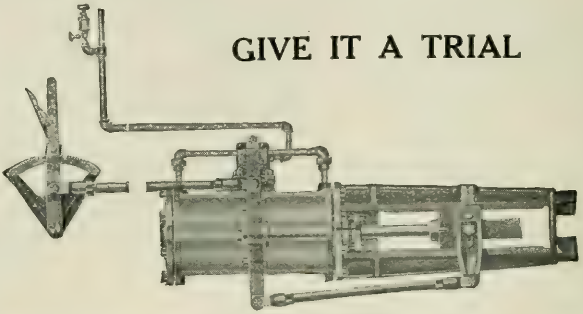

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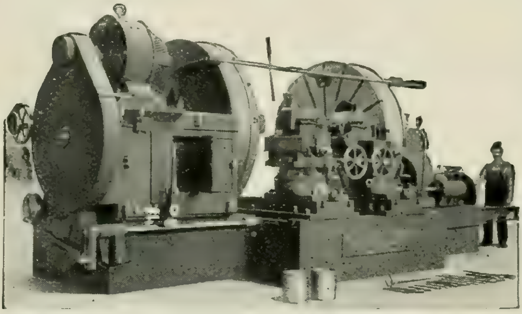

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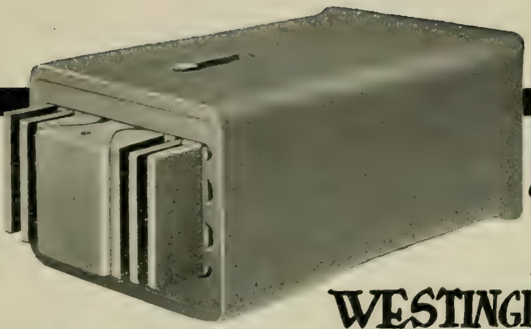

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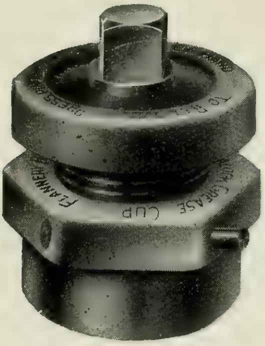

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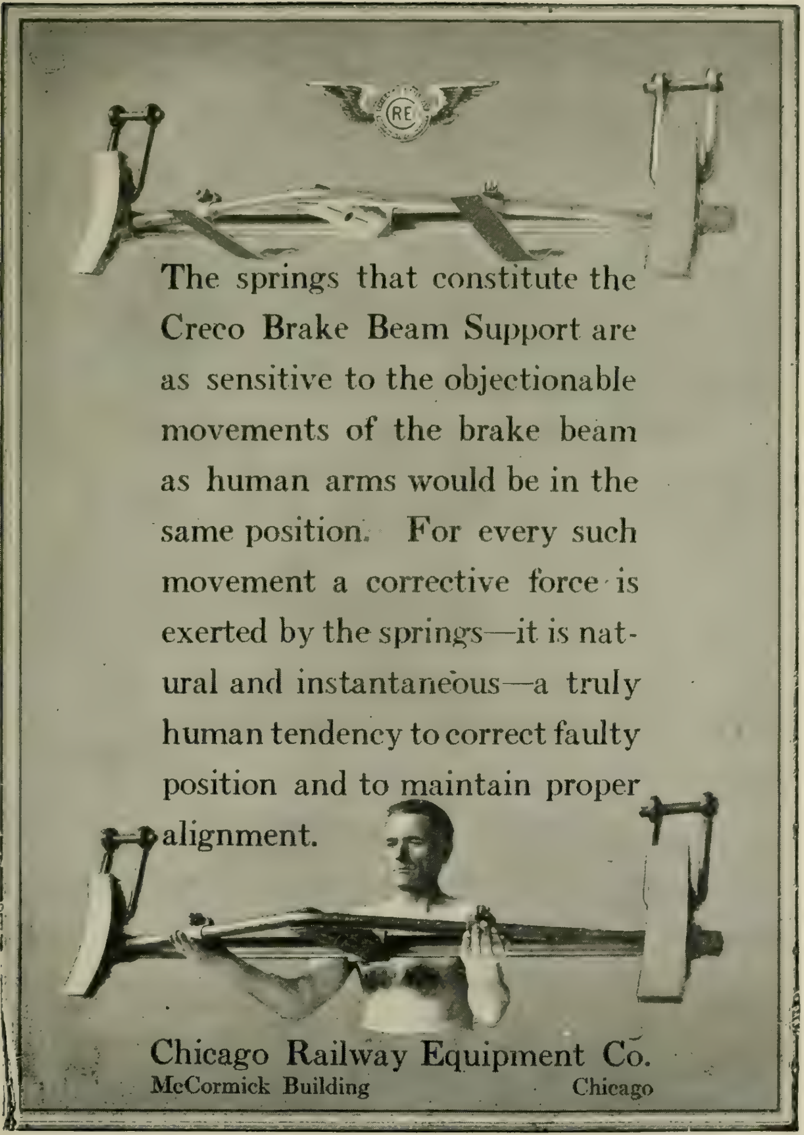

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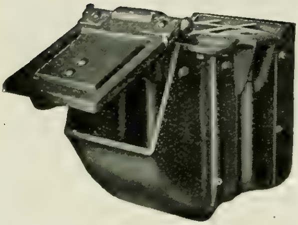

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OFFICIAL PROCEEDINGS
OF
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Past Presidents

*J. H. McCONNELL	October, 1901, to October, 1903
L. H. TURNER	November, 1903, to October, 1905
F. H. STARK	November, 1905, to October, 1907
*H. W. WATTS	November, 1907, to April, 1908
D. J. REDDING	November, 1908, to October, 1910
F. R. McFEATTERS	November, 1910, to October, 1912
A. G. MITCHELL	November, 1912, to October, 1914
F. M. McNULTY	November, 1914, to October, 1916
J. G. CODE	November, 1916, to October, 1917
D. M. HOWE	November, 1917, to October, 1918
J. A. SPIELMANN	November, 1918, to October, 1919
H. H. MAXFIELD	November, 1919, to October, 1920
FRANK J. LANAHAN	November, 1920, to October, 1921
SAMUEL LYNN	November, 1921, to October, 1922
D. F. CRAWFORD	November, 1922, to October, 1923

*—Deceased.

Meetings held fourth Thursday of each month except June, July and August

PROCEEDINGS OF MEETING

APRIL 24, 1924.

The meeting was called to order at the Fort Pitt Hotel, Pittsburgh, Pa.; at 8 o'clock P. M., President George D. Ogden in the chair.

The following gentlemen registered:

MEMBERS

Abel, A. W.
Ambrose, W. F.
Anderson, A. E.
Anderson, G. S.
Anderson, J. W.
Anger, C. E.
Antes, Edwin L.
Babcock, F. H.
Beach, H. L.
Berg, Karl
Berghane, A. L.
Braun, J. F.
Brower, J. E.
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Campbell, J. T.
Carlson, F. R.
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Clark, Chas. H.
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Conway, J. D.
Courtney, H.
Crawford, D. F.
Crenner, J. A.
Cunningham, R. I.
Dembach, C. O.
DeVilbiss, E. B.
Dierker, R. H. L.
Dunbar, H. F.
Emery, E.
Faix, Joseph
Fannon, S. F.
Fisher, J. J.
Freshwater, F. H.
Fults, J. H.
Furch, Geo. J.
Gaw, F. W.
Glenn, J. H.
Goda, P. H.
Graham, John A.
Greene, W. F.
Guignon, W. E.
Hackett, C. M.
Hale, Chas. E.
Headington, R. V.
Hickling, F. G.
Hoover, R. C.
Howe, C. A.
Howe, D. M.
Hulick, E. G.
Hultman, Carl
Hussong, A. C., Jr.
Hyde, W. B.
Johnson, Geo. T.
Jordan, J. M.
Jungbluth, Adolph
Kearney, J. W.
Kegel, A. E.
Kelly, H. B.
Ketchpel, Paul A.
Kinch, L. E.
King, C. F., Jr.
Kroske, J. F.
Kummer, Jos. H.
Lanahan, J. S.
Larsen, Jacob C.
Laughlin, R. J.
Lee, L. A.
Lehr, H. W.
Lewis, Herbert
Lilley, C. S.
Lobez, P. L.
Long, R. M.
Ludgate, B. A.
Ludwig, C. F.

Lynn, Samuel
Meeker, H. B.
Meschter, E. F.
Millar, C. W.
Mitchell, F. K.
Mitchell, Wm. J.
McGregor, D. C.
North, D. P.
O'Brien, M. J.
Ogden, Geo. D.
Orchard, Chas.
Osbourne, Alfred S.
Padfiield, Archie
Painter, Jos.
Parke, F. H.
Parker, W. G.
Patterson, J. E.
Pehrson, Alfred K.
Peoples, J. S.
Posteraro, S. F.
Prouty, Eugene
Rabold, W. E.
Ralph, W. E.
Ralston, J. A.
Rauschart, E. A.
Redding, D. J.
Renshaw, W. B.
Rhodes, W. H.
Robbins, F. S.
Schrader, A. P.
Seibert, W. L.
Severn, A. B.
Shellenberger, H. M.
Sheridan, T. F.
Snowden, H. J.
Snyder, Jos.
Staman, Harry Z., Jr.
Stoller, Karl M.
Storer, N. W.
Sutherland, L.
Sutter, Chas.
Taylor, H. G.
Thompson, L. D.
Walter, W. A.
Walther, G. C.
Ward, Norval H.
Wells, F. H.
Winell, K. O.
Wright, John B.

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Whipps, J. W.
White, Arthur H.
Williams, Samuel
Wilson, Henry J.
Wurts, T. C.
Wynne, F. E.

The call of the roll was dispensed with, the record of attendance being obtained through the registration cards.

The reading of the minutes of the last meeting was dispensed with as they are to appear in printed form.

The Secretary read the following list of applicants for membership:

Baker, Henry A., Sales Rep., The McBee Binder Co., 1844 E. Eighty-ninth St., Cleveland, Ohio. Recommended by J. T. Campbell.

Balzer, C. E., Electrician, P. & L. E. R. R., 122 Frustum St., Twentieth Ward, Pittsburgh, Pa. Recommended by R. M. Long.

Bruner, Emil E., Gang Foreman, Penna. R. R. System, 1312 Woods Run Ave., N. S. Pittsburgh, Pa. Recommended by H. J. Steigerwald.

Cooper, Sidney B., General Engineer, Railways, Westinghouse Elec. & Mfg. Co., 152 Wilkins Road, Wilkinsburg, Pa. Recommended by D. J. Redding.

Kessler, Howard, R. F. of E., P. & L. E. R. R., 310 Grove St., McKees Rocks. Recommended by R. M. Long.

DeLeon, P., Supt. Power Plant, Pittsburgh Terminal Coal Co., 2802 Ocean Ave., Dormont, Pittsburgh, Pa. Recommended by Jos. A. Crenner.

Luttrell, A. E., C. C., Legal Dept., Penna. R. R. System, 925 Penna. Station, Pittsburgh, Pa. Recommended by H. K. Matchett.

Lynde, Leslie, E., Sales Engr., Westinghouse Elec. & Mfg. Co., Heavy Trac. Div. Rwy. Dept., East Pittsburgh, Pa. Recommended by D. J. Redding.

McLaughlin, Howard B., Asst. R. F. of E., P. & L. E. R. R., 1433 Swantek St., Pittsburgh, Pa. Recommended by R. M. Long.

McQuillen, J. J., Vice Pres., Universal Packing Corporation, 342 Second Ave., Pittsburgh, Pa. Recommended by Alfred S. Osbourne.

O'Connor, M. J., Rep., Dearborn Chemical Co., 710 Farmers Bank Bldg., Pittsburgh, Pa. Recommended by J. D. Conway.

Sener, H. H., Sales Engr., Westinghouse Elec. & Mfg. Co., Heavy Trac. Div. Rwy. Dept., East Pittsburgh, Pa. Recommended by G. S. Anderson

Stewart, Leonard S., Road Foreman, P. & L. E. R. R., Broadway, McKees Rocks, Pa. Recommended by H. B. Kelly.

Taylor, Joseph M., Sales Dept., Ball Chemical Co., 1201 Fulton Bldg., Pittsburgh, Pa. Recommended by H. G. Taylor.

White, C. M., Supt., Monongahela Connecting R. R., 3540 Second Ave., Pittsburgh, Pa. Recommended by Samuel Lynn.

Wright, James H., Foreman, Penna. R. R. System, Box 182, Verona, Pa. Recommended by R. V. Headington.

PRESIDENT: As soon as these applications have been approved by the Executive Committee, the gentlemen will become members upon payment of the year's dues.

At the last meeting I rather humbly stated that two or three suggestions had been offered to your President to say something on the subject of freight rates. I undertook to prepare a brief paper, which will appear in the Proceedings of the March meeting. I have thought perhaps it might be interesting to continue that discussion with another brief paper, which will appear in the proceedings of this meeting. Because of our very interesting program, there is not time to take up this subject in connection with our regular program, but if those who may be interested care to ask any questions, opportunity will be afforded at a subsequent meeting for the customary discussion.

We have the pleasure this evening of having with us Mr. F. E. Wynne, Manager of the Railway Equipment Department of the Westinghouse Electric & Manufacturing Company, who will address the Club upon the subject of "Railway Electrification."

RAILROAD ELECTRIFICATION

By F. E. WYNNE, Manager, Railway Equipment Engineering Department, Westinghouse Electric and Manufacturing Co.

The subject of railroad electrification has so many phases that it would be quite difficult to give you a comprehensive presentation of it in a single evening. The history of its less than thirty years' life since the initial installation in the Baltimore Tunnel of America's oldest mountain- crossing railroad is interesting. However, progress has been of necessity slow and somewhat irregular.

While all of the present solutions of the problems of generation, transmission, conversion and distribution of electric power to railroads may be subject to further refinement, I shall not undertake to discuss them but shall call your attention mainly to the motive power. At the risk of being considered an unbridled enthusiast, I shall first enumerate some of the advantages of railroad electrification.

Power stations and distribution systems are perfected to such a degree that power supply is practically 100 per cent continuous. Therefore, the motive power alone determines the electric system's readiness to serve. The operating range of steam locomotives is limited by the necessity for frequent trips to the roundhouse for running repairs, cleaning fires, washing boilers and by delays on the road for taking fuel and water. These inactive periods consume a large portion of each day. Electric locomotives operate from 1,000 to 3,000 miles during the period between light inspections, and such inspections require very little time. Electric locomotives are sent to the shop for general overhaul, following periods of service ranging from 100,000 to 400,000 miles. These factors give the electric locomotive a great availability for service. Steam locomotives are available for service from 25 to 50 per cent of the time. It is conservative to say that electric locomotives in general are available for service 75 per cent of the time and in some instances 90 per cent availability has been maintained for considerable periods. Steam locomotives in the United States average a daily service of about 55 miles. If electric locomotives, exclusive of switchers, average less than 80 miles per day it is because of some peculiarity of the service, or, there are too many locomotives on the job. On the Chicago, Milwaukee & St. Paul Railroad electric zones, which afford the opportunity for straightaway runs of from 200 to 440 miles, the daily average per locomotive in passenger and freight service is 136 miles. On the New York, New Haven & Hartford Railroad electrified division, where the maximum run is limited to 73 miles, the daily average per locomotive in passenger and freight service is 135 miles. On the Pennsylvania Railroad terminal electrification at New York, with a maximum run of only 12 miles, the daily average per locomotive in passenger service only is 120 miles.

Steam locomotives are subject to road failures on account of cold weather, poor coal, and lack of attention to fires. Electric locomotives are independent of these and thereby secure a greater degree of reliability. This is immensely important because an engine failure on the road not only delays its own train but often delays other trains. The greater reliability and certainty of maintaining speed with electric locomotives have caused dispatchers on at least one electrified railroad to make a practice of sending out freight trains only a few minutes ahead of passenger trains following on the same track.

The maximum output of a steam locomotive is limited by the boiler, which in turn is limited in size by length and road clearances. The maximum output of electric locomotives is limited only by weight concentration on the tracks, adhesion between the drivers and the rails, and the permissible heating of the electrical equipment for short periods. The resulting greater overload capacity of electric locomotives is of great value in increasing the certainty and promptness of starting from rest and in assuring the maintenance of drawbar pull and speed on grades.

Both steam and electric locomotives are now limited by the strength of cars, bridges and the number of cars for which the air brakes are adequate. In addition, the amount of steam power which may be concentrated on a train is limited by the difficulties of enginemen working their locomotives in unison, and by the extreme danger in long tunnels. Much greater power can be placed under the control of one engineman electrically and so controlled that all units work in unison and smoothly Also, electric locomotives emit no smoke nor gases in tunnels or elsewhere.

The use of electric motive power makes it possible to greatly increase the capacity of tracks. The major factors which produce this result with electric locomotives are that they can handle safely larger trains at higher speed and at closer intervals with fewer train breakages and the elimination of delays which are inherent to steam operation. Multiple-unit electric trains increase track capacity through more rapid acceleration, faster schedules, power proportioned to the size of train, and the great reduction in engine and train movements at terminals. This advantage is especially valuable in localities where the limit of track capacity with steam operation has been reached.

One of the benefits of electrification which has been frequently emphasized is fuel economy. It must be recognized, however, that the degree of benefit derived from this source depends quite largely upon the cost of electric power, when purchased from stations foreign to the railroads. The amount of coal burned in the electric power house is less than the amount required by steam locomotives to do the same work, principally because of the inherent economy of burning fuel in one large station instead of in many small ones, and because of the reduction in standby losses on the locomotives themselves. The cost of power may also be decreased by burning a cheaper grade of fuel in the power station. Coincident with electrification is the reduction in non-revenue ton-mileage for hauling company fuel. Where power is purchased this item is almost entirely eliminated. In some coalless countries freedom from the burden of relying on imported fuel is very important and at times vital.

Ordinarily, electric locomotives individually are more powerful than the steam locomotives which are superseded by them, and they utilize their additional power for hauling heavier trains at higher speeds. Therefore, the usual method of comparing locomotive maintenance costs directly on the basis of locomotive miles is obviously incorrect, irrespective of whether the comparison is between two classes of steam locomotives or between steam and electric locomotives. Logically the maintenance costs should be compared on the basis of the work done. When so compared, electric locomotives show a large reduction in the expenditures for inspection, engine house expense, repairs and replacements.

With some types of electric locomotives, the ability to hold the train by regeneration when descending grades is inherent. This characteristic can be provided with all types of electric locomotives, with more or less complication depending on the type. The advantageous features of regenerative braking are increased safety, reduction in wear and tear on wheels, brake shoes and brake rigging, reduction in delays at summits for setting retainers, elimination of stops for cooling wheels on long descending grades, less liability of train breakages, and economy.

The elimination of smoke, obnoxious gases and the noises of the exhaust, which accompany steam locomotive operation, is especially valuable in passenger terminals, tunnels and along the right-of-way in large cities. The electric locomotive emits no sparks from the stack and therefore eliminates this cause of fires in wooded territory. Generally electric locomotives require no water stations with their attendant cost of maintenance and operation.

In multiple unit and switching services, the higher acceleration rate possible with the smooth control provided on electric motive power is valuable. The resulting more rapid and more comfortable passenger service can be capitalized to advantage. The number of locomotives required to perform a given switching service can be minimized. The accurate control and uniform acceleration attainable with electric power lessen surges and shocks with possible damage to equipment.

Electrification, further, opens up the field of improving operating methods on the railroads. I feel that to date the opportunities in this direction have not been embraced fully, largely because of the scarcity of long lines electrified and the few complete divisions operated entirely by electricity. More extended electrification will enable the railroads to realize and adopt improved operating methods which are contingent upon reduced delays, less wear and tear on equipment, less damage to goods, and the elimination of intermediate engine terminals.

The ability to control almost unlimited electric motive power from one point affords the means of greatly reducing engine crew and train crew expense. More tons can be hauled in a single train and more tons can be handled by one locomotive. The greater speed when moving, the reduction in delays on the road and the greater reliability of electric power, lead to more effective use of train crews.

Electric operation offers assistance in building up traffic, both through advertising and through better service to the railroad's patrons. It is safer, faster and more reliable for all classes of traffic, and for passenger traffic carries the additional advantage of greater comfort.

In setting forth the foregoing advantages of electric operation, I have necessarily used the steam locomotive for comparison, because I feel that you will get a better appreciation of the situation by having a basis with which you are familiar. I do not wish to detract in any way from the glory of the steam locomotive, which has been the very effective instrument by which the remarkable development of the United States has been accomplished. I also appreciate the decided improvements which have been made in steam locomotive design and construction and operation in recent years. As we are approaching the centennial of the application of steam power to rail transportation, there is every reason to congratulate the designers, builders and operators of steam locomotives upon their very real accomplishments in the face of difficulties and limitations both inherent and artificial.

As to some of the details of accomplishment of electric power in transportation, it may be noted that electrification has been applied to all classes of railroad service with different problems to meet in each locality. The reasons for electrifying have been various, but in every instance successful operation has resulted. In many instances, material benefits have accrued which, at the time of installation, were unexpected by either the railroad or the proponents of electrification.

Electric locomotives were placed in service on the Baltimore & Ohio Railroad at Baltimore, in 1895, for the purpose of getting relief from the discomfort and danger of grade operation in tunnels with steam power. These locomotives were of a glorified street car type, weighing eighty (80) tons and taking power from a 600-volt contact line. As with any pioneer machinery or application, they were highly educational to both the railroad men and the electrical engineers, yet they proved effective. Larger and more modern units were applied to this service at intervals and, finally, after 25 years of service, the first electric locomotives were scrapped on account of obsolescence and in no wise because of inability to continue to haul trains.

A somewhat similar installation is the St. Clair tunnel of the Grand Trunk Railway. This was electrified in 1908, using 130-ton articulated locomotives, receiving single-phase alternating current from a 3,300-volt overhead contact line. An example of long life is found in the fact that the original gearing is yet in service after 15 years' operation.

This Grand Trunk electrification is short—four miles of single track through the tunnel and approaches between yards. Besides switching, the service consists of starting trains of 1,000 tons from one yard, running down the 2 per cent grade into the tunnel, and then up another 2 per cent grade to the other yard. This upgrade portion of the haul is the only part of the service imposing heavy duty on the power station. As it is definite in amount and duration, and intermittent in character, it permitted the inclusion of a unique feature in the power station in the form of a steam flywheel. Each boiler was provided with three enormous steam drums, providing storage for the steam generated while the load was small. The peak loads drew energy from these reservoirs and also operated a control which speeded up the stokers and the fans which supplied the forced draft.

The operation of this property has been most successful. The results show what can be accomplished by an operator who takes pride in his work and is ingenious. A real measure of the success of this electrification is found in the fact that the total cost for handling each car was reduced to one-half of what it was with steam locomotives. Electric operation here increased the train load from 760 to 1,000 tons, raised the speed, and decreased delays due to train breakages, the net result being 100 per cent increase in the capacity of the tunnel.

Geographically quite near to the St. Clair tunnel is the Detroit River Tunnel of the Michigan Central Railroad, which has been electrically operated since 1909, when its construction was completed. Of the ten locomotives, six weigh 100 tons each and four weigh 120 tons each. The 600-volt, direct current, third rail system is used in this installation with satisfaction.

The Cascade Tunnel of the Great Northern Railroad is the only example of three-phase electrification in this country. It, also, was electrified in 1909 and employs a total of four 115-ton locomotives receiving 6,600 volts from the double overhead contact line. Three of these locomotives coupled together are required to handle a single freight train. On account of the limitations of this system, it is improbable that any further extension of main line electrification on the Great Northern will perpetuate this system.

The Hoosac Tunnel on the Boston & Maine Railroad is the longest in the United States. It is double tracked, rising from each end to a summit near the middle, and is operated by 11,000 volt, single phase, alternating current locomotives weighing 132 tons each. The installation was made in 1911, five locomotives being provided at the outset, and two being added later to meet the demands of increased traffic. As this tunnel is internal to an operating division, it was found to be most economical to haul the steam locomotive with its train through the tunnel instead of cutting off the steam locomotive at one end and coupling on another after passing the tunnel. However, the steam power does not work within the tunnel.

Prior to electirfication, conditions were so bad in this tunnel that only one passenger train at a time was allowed to enter. Now a maximum of three trains on each track within the tunnel is permitted. This gives a measure of the increase in capacity. The average traffic requires 62 train movements daily through the tunnel and at times of peak business 100 such movements have been made in a single day; that is, a train every quarter hour

Legislation required the New York Central Railroad in 1906 to electrify its terminal in New York City, the approach being through the Park Avenue tunnel. Realizing the benefits of electric suburban service with multiple unit cars, this railroad electrified its suburban zone along with the terminal. Locomotives are used for the through passenger service. The 600-volt, direct current, third rail system is employed and the operation comprises 262 miles of track, 73 locomotives and 256 multiple unit cars. Freight enters New York by a different route, steam operated, but recently legislative action has been taken to compel electrification of the freight lines within the city in the immediate future.

The New York Central tracks from Grand Central Terminal to Woodlawn (12 miles) are used by the New Haven Railroad for the major portion of their through passenger and suburban service into New York City. Consequently the compulsory electrification of the New York Central forced the New Haven to choose between the electirfication of their own lines and the burden of changing motive power at Woodlawn. They selected electric operation, but chose an electric system different from that of the

New York Central, and provided a type of passenger motive power which operates from both syestems. Electric service was commenced in 1907. The New Haven has some of the densest traffic in the country and is one of the few roads deriving the major portion of its revenue from passenger service. Therefore, believing in the advantages of electric operation, they selected the 11,000-volt, single-phase system with the intention of extending electric operation through to Boston ultimately. This installation now comprises the entire New York Division from New York City to New Haven, including 530 miles of track, 117 locomotives and 99 multiple-unit cars. However, they yet need additional electric motive power to permit electric operation of all trains on this division.

The 41 original locomotives purchased are yet in service and have each made over 1,250,000 locomotive miles. Two of the New Haven's large classification yards are electrified. In this service 15 electric locomotives replaced 25 steam units. These locomotives are in service 24 hours a day and a number of them have operated thus for 30 consecutive days with no interruptions.

On holidays and special occasions the demand for special trains is enormous. For a recent football game in New Haven, the electric locomotives handled nearly 23,000 passengers in 42 trains dispatched in one direction in a period of 3½ hours.

This railroad this month has received from the manufacturer the last of an order of 12—180-ton Baldwin-Westinghouse passenger locomotives. These locomotives are of the same type and general construction as were those purchased about five years ago.

The construction of the New York Terminal of the Pennsylvania Railroad and its approaching, under-river tunnels was made possible by electric power. This system operates from a 600-volt, third rail and extends from Manhattan transfer on the Jersey side, under the rivers, across Manhattan, to Sunnyside yard, on Long Island. Thirty-three 157-ton articulated electric locomotives have been in use since 1910 on this 100 miles of track. Each locomotive can develop 4,000 horse power maximum and averages 44,000 miles annually. The Pennsylvania Railroad is now building at their Altoona shops two 200-ton locomotives for the New York Terminal service to assist in handling the growing traffic. In addition, the New York Terminal accommodates the electric multiple-unit trains of the Long Island Railroad, which was electrified in 1905, and, which in 1922, operated over 227 miles of single track and handled 80,000,000 passengers with 634 multiple-unit cars. They are now placing in service 100 new equipments.

In 1906, the Pennsylvania Railroad electrified the West Jersey and Sea Shore Railroad between Camden and Atlantic City, on the multiple-unit plan with direct current, third-rail equipment which gives an excellent electric service.

In 1915, the Pennsylvania Railroad instituted electric suburban service on their main line between Philadelphia and Paoli, and in 1918, opened the Chestnut Hill branch. This electrification was brought about primarily by the extreme congestion in Broad Street Terminal, and made it possible for the railroad to avoid enormous expenditures for real estate and additional trackage in the heart of the city. The multiple-unit system was employed and I understand that these electric trains eliminated 60 per cent of the movements per train through the throat of the terminal, as required by steam locomotive operation.

Although the Pennsylvania Railroad had 600 volt, direct current installations at New York, and on the West Jersey and Sea Shore, and Long Island Railroads, they selected the 11,000 volt, single-phase, alternating current system with overhead trolley for the Philadelphia Terminal, as being most suitable for further electrification, which promises to be quite extensive. There are 130 multiple-unit cars now in this service and 118 miles of electrified track. The relief secured here has been reported as equivalent to a 20 per cent increase in the capacity of the Broad Street Terminal.

In 1915, the heaviest electric freight operation ever undertaken in the world was commenced on the Elkhorn grade of the Norfolk and Western Railway over the Alleghenies. For this service 12 double-unit, single-phase Baldwin-Westinghouse locomotives were provided. The original electric zone comprised 30 miles of line, double-tracked, except through the 3,500-foot tunnel at the summit, and embraced a total of nearly 100 miles of track. The western 15 miles of this line was on a continuous grade ranging from 1 to 2 per cent against the direction of traffic. Under steam operation 22 mallet locomotives had performed the service in spite of serious operating difficulties due to slow speed, train breakages, delays for taking coal and water, and congestion of trains on the hill. On the grade three mallets were used on each drag freight train. The same weight of train is being hauled today by two electrics and at more than double the speed. During the war the export coal traffic increased enormously. At times 65,000 tons have been put over the hill eastbound in 24 hours and only nine of the locomotives were required to do it. The Norfolk & Western Railway has estimated that 33 steam mallets would be necessary for the normal increased traffic now handled, if it were at all possible to handle such traffic with steam power and no greater track facilities than now exist.

The electric operation of the Norfolk & Western has been so effective that the electric zone has been extended westward and there are now under construction new locomotives, each weighing 414 tons and being 30 per cent more powerful than the original ones. All of the Norfolk & Western locomotives are of a type particularly suited to heavy grade service. By special arrangement of the equipment, single-phase power is taken from one overhead wire and converted to polyphase power for driving the locomotives at constant speed. With this type of propulsion motor, with a very slight increase in speed on down grades, they automatically convert the mechanical energy of the descending train into electrical energy and return it to the system for use in moving other trains. At the same time, this action serves to brake the train, and the use of the air brakes on the Norfolk & Western electric locomotives is practically unknown except for stopping.

The marked success of this electrification has been recently indorsed by the action of the Virginian Railway in selecting the same system and type of motive power for the electrification of 135 miles of their main line between Mullens, W. Va., and Roanoke, Va. Their requirements are very similar to those of the Norfolk & Western, but heavier trains will be handled. Six thousand-ton trains will be hauled up the 2 per cent grade, and 9,000-ton trains will be operated on the lighter portion of the line. Where the Norfolk & Western use two units as a single locomotive, the Virginian will use three units per locomotive. On the heavy grades the speed will be 14 miles per hour and on the light grades and level 28 miles per hour will be used.

In 1913, in Montana, the Butte, Anaconda & Pacific Railroad electrified their line, comprising 28 route miles and 90 track miles, employing an overhead trolley system at 2,400 volts, to operate 24 locomotives weighing 80 tons each. These locomotives average 25,000 miles annually, and the operation has been quite satisfactory. In this case, the service is relatively easy, the loaded ore trains running down hill for almost the entire distance. The chief reason for electrifying was the high price of fuel and the availability of extremely inexpensive electricity from water power.

In 1917 and 1918, the Chicago, Milwaukee & St. Paul Railroad began electric operation of two divisions of their single track main line crossing the Belt, Rocky and Bitter Root Mountains. This is 440 route miles and is the most picturesque installation in America. The success of this operation led to the further electrification of their 206-mile division over the Cascade and Coast Ranges in 1920. These two Milwaukee electrifications are separated by a steam-operated division. The total of single track electrified is 860 miles. The difficulties of mountain operation with steam in very cold weather (30 degrees to 50 degrees and occasionally 70 degrees below zero), the availability of cheap electric energy from water power, and the proved reliability of electric operation, were among the prime reasons for this installation.

Fifteen passenger, 42 freight, and four switching locomotives of the 3,000-volt type, are employed in this service. Remarkable reliability has been found in the electric locomotives on this road. The shops are at the middle of the electric zone. Regular operation is for a locomotive to leave the shop, run 220 miles to one terminal, pick up the first returning train, run 440 miles to the other terminal, get the next returning train, run 220 miles to the shops and then be uncoupled for inspection. It is not uncommon for a passenger locomotive to operate 12,000 miles in one month. At one time one of these locomotives made 760 miles in a single day.

Several experimental engines are worthy of mention. About five years ago, the Pennsylvania Railroad designed and built a 280-ton single-phase locomotive with equipment for developing 4,000-horse power continuously at 20 miles per hour and capable of developing a maximum of 7,000 horse power for short periods. This locomotive was designed for mountain freight service for their prospective requirements. It is of the same electrical type as the Norfolk & Western locomotives, and is the most powerful single unit electric locomotive in the world. It is being used in regular service for pushing freight trains from Overbrook to Bryn Mawr and Paoli on the Philadelphia Terminal electrification, and has been doing its work well.

Following the building of this locomotive, the Pennsylvania Railroad have constructed a general purpose locomotive, suitable as a road engine for both passenger and freight services. Studies indicated that this goal could be attained and they are just now completing three of these at Atloona. The two locomotives yet uncompleted will be arranged for operation in the New York Terminal passenger service. The third engine which was finished in January, and exhibited at the A. I. E. E. Convention at Philadelphia in February, is arranged for operation, and has been used in service, in the Philadelphia suburban zone. This locomotive weighs 204 tons and has a continuous rating of 3,060 horsepower. At this rating, the speeds are respectively, 23 and 46 miles per hour, with freight and passenger gearing.

Two locomotive units for the Detroit & Ironton Railroad are now being built at the Ford Motor Company's Detroit plant. They are of a novel type, both mechanically and electrically, receiving single-phase power from the trolley and utilizing axle-hung motors for propulsion. Their performance will be followed with great interest, and the type promises to be a valuable addition to electric motive power.

Time will not permit me to extend this resume of accomplishments to foreign countries where electric operation has been applied to twice as many route miles of railroad as in the United States; where the number of locomotives is 40 per cent more than here; where a greater variety of locomotive types has been built and operated; and where further electrification is now actively under way in 18 different countries. It is gratifying to our National pride to know that American manufacturers are building electrical equipment on orders from half of these foreign countries.

Now, as to the status of railroad electrification and its prospects. What I have already told you is but a small portion of the evidence which has accumulated to show beyond question that electric motive power is not only capable of handling all classes of railroad service, but that it can do this better than is possible with steam. All elements of the electric system from coal pile to rail have been proved. The broad principles of design, construction and operation are established. As a means for extending the economical range of electrification, there remain the refinement of designs; the improvement of materials and methods of construction; the adaptation of railroad operating methods and facilities to electric motive power; and always the development of new apparatus and new electrical principles. In other words, intensive engineering in thirty years has developed a servant which can effectively meet all the physical requirements of our modern railroad transportation system, the demands upon which have increased three-fold in passenger traffic and five-fold in freight traffic within the same period.

Motive power units, ranging in continuous capacity from 400 to 4,000 horsepower are in operation. The locomotives now building for the Virginian will develop continuously 5,100 horsepower at 14 m.p.h., or 5,950 horsepower at 28 m.p.h. In starting, this locomotive will be able to exert 300,000 pounds tractive effort. This is seven times the maximum permitted on the heaviest railroad equipment in Europe. Even in this country, only a few railroads, having exceptionally sturdy rolling stock, can utilize such a powerful locomotive. It therefore appears that there are now available electric locomotives far more powerful than required or usable by the railroads generally until such time as the rolling stock and roadway are strengthened greatly. In other words, electricity can adequately meet the physical requirements of transportation far beyond the present general demand.

Further extension depends largely upon increased requirements. The City of Chicago and the Illinois Central Railroad have agreed upon the electrification of the latter's terminal and suburban trackage. Some of this must be in operation by 1926.

The Denver & Salt Lake Railroad have authorized the construction of a six-mile tunnel on their main line in order to get away from the severe weather conditions encountered in crossing the Divide. Incidentally, this will decrease the distance 23 miles, lower the summit 2,432 feet, and eliminate all snowsheds and all but two of the 12 degree curves which are now well-nigh continuous throughout the 29 miles of track between the portals of the proposed tunnel. This tunnel will be electrically operated.

Considerations of expanding traffic and economy led to the Virginian electrification. Their experience with heavy steam locomotives convinced them that they had gone beyond the economical limit in size of steam power. Investigation demonstrated that electric operation offered the most economical means of handling future increased traffic. This same condition exists, or will arise, with growth of traffic on each of our railroads which cross mountain ranges.

Even where grades are not severe, some of our railways are facing the condition of prohibitive main line congestion with normal growth of traffic. Great relief can be secured by electrification which will lend itself to increases in train sizes and speed.

The high price of fuel, the periodic uncertainty of its supply, and the non-revenue mileage imposed upon the railroads by the sole item of transporting fuel for their own locomotives to burn, favor electrification in two days: First, reduction in fuel produced, transported, and used, where power houses supply energy to electrified railways; second, elimination of fuel activities, where electricity from water power is at hand. This favorable influence will become more potent as more efficient and economical means and methods of producing and distributing electric power are devised. An activity leading in this direction is the proposed superpower system.

Full advantage is not taken of the possibilities of electric operation unless it is used to develop new traffic, as well as to handle the going business at the time of installation. The ease and effectiveness with which passenger service can be improved by applying multiple unit trains is worthy of careful study. In particular, suburban service can be induced thereby to produce worth-while increases in revenue. An instance is on record where electric service increased travel 100 per cent in the first year and attracted an additional 80 per cent the second year.

In freight service, the average car moves approximately 30 miles per day. What an enormous improvement in service, and possibly reduction in rates, would result if this average could be doubled or tripled! Electricity is prepared to do its share towards accomplishing this by increasing speed in transit, decreasing delays at terminals and classification yards, and by eliminating some of the causes of bad order cars and damaged freight.

In conclusion, let me say that electrification has been sold to the railroads. Its advantages, as proved by its accomplishments, have convinced those railroad officers and engineers who have studied it carefully and conscientiously that they have here an effective means of giving better service to both their stockholders and the public.

In other words, electric power is an improved tool for the use of the railroads. Railroad engineers are continually making studies of its possibilities, not only for motive power, but also for the improvement of every phase of railroad service, operation and maintenance.

In common with other major improvements, electrification requires large capital expenditures which, of course, cannot be undertaken unless the earnings and credit of the railroads are adequate. One of the foremost problems confronting all of us is that of helping to place the railroads upon a sound credit basis. The chief obstacle at the present time appears to be the indeterminate nature of government interference and regulation, and the possibility that the railroads will be subjected to continued and additional burdens arising from theories and ideas presented by some of our politicians and others who have selfish or political motives. Some of these theories indicate that government ownership would be desirable in this country. As a matter of fact, such a result would be a calamity, for government ownership elsewhere has proven inefficient and uneconomical. Today Italy is striving to devise a plan for returning her government railways to private operation in some form.

I am sure that each of us who is fully informed and understands the problem will exert his influence in support of all endeavors to insure to the American railroads the continuance of private ownership under reasonable regulation. With the assurance of ample revenue and credit, further railroad development can safly be predicted. In this development, electrification will be an ever-increasing and important factor.

NOTE: Mr. Wynne's address was accompanied by illustrated pictures of various types of electrical rolling equipment.

PRESIDENT: I am sure we have all been both entertained and edified by this able address. The subject is now before you for general discussion. I notice Mr. Storer in the audience. Will he be good enough to say something?

MR. N. W. STORER: It seems to me there is not much left for an electrical man to say. All we need now is to have contract forms brought up here ready for signature on the dotted line. There are a number of men in the audience who are perfectly qualified to do that and those who wish their locomotives delivered promptly should get their order in at once.

The subject has been very fully covered. The review of what has been done with electric locomotives in the past thirty years has been presented, I think, as well as it could possibly be done, better than I have ever heard it before. And I say that not simply because of friendship for Mr. Wynne, but because I have heard many people undertake the same job and have tried it myself a number of times.

The great question before the American railroads today is: Where is electrification going to pay? As I see it, and I think Mr. Wynne has pointed it out pretty clearly, it is going to pay where the railroads can not get along without it. In the first place, that is in tunnels and in yards and in terminals, stubb and terminals, and conditions of that sort. The railroads must come to it. It means so much in added values to the terminals and capacity to the tracks that those are the places where it naturally must come first.

I do not look now, as I did once, for a great extension or complete electrification of all the railroads in the country. It will be probably many years after all of us have passed on before all the railroads will be electrified. But when it once gets down to a working basis—we have only been working around the edges so far—I think it will come pretty rapidly with the growing demands of the railroads. They have got to electrify a great many of the lines in order to get the capacity which will soon be necessary. You must remember that when you electrify, the question of motive power is eliminated from your calculation. You have got what you may consider unlimited motive power. At the present time it is any amount of power which can be utilized, anything which the couplings will stand and the bridges will carry. When once the motive power is electrified, then attention must be turned to improving the service in other ways before any limit is reached.

PRESIDENT: We also have the honor of having with us Dr. Charles F. Scott, of Yale University, from whom we should like to hear.

DR. CHARLES F. SCOTT: Mr. Wynne suggested when I had some conversation with him before the meeting, that I might repeat what I remarked to him not long ago. It was this, and is simply in verification of a statement he made. Yale University serves not only the intellectual, but the physical. We have a sort of extension course in athletics which we extend to the general public, and they come to our great events to share the benefits. We fill our great Bowl with 80,000 people who all come at once and go at once. Some friends were to come up from New York to one of the big games last fall and telephone me on arrival. I went to the information stand at the New Haven station on the evening before the appointed day to make inquiry. The information man drew out three big typewritten sheets with one line for each train. They began at 8 o'clock and ran on a 10-minute schedule from New York, the last leaving at 11:20. That list in that form impressed me more than even Mr. Wynne's statement that there were some forty trains during three hours and a half. There they were, listed one by one.

I heard nothing from my friends and the next day, along about 12:30, I began to wonder what might have happened, thinking something electrical might have gone wrong. So I called up the information man at the station and asked whether the football trains were coming from New York on time. He said "Yes, ahead of time." There was a 10-minute service on the 73-mile run and the trains were coming in ahead of time.

Mr. Storer referred a moment ago to the wonderful development that has taken place in thirty years in the electric locomotive. The steam locomotive has had ninety years in its development. In the New York Central treminal there is now on exhibition a most interesting collection of historical data, pictures of early locomotives of the various types from 100 years ago to the present, and models in miniature of these locomotives with the wheels in motion. It is a beautiful exhibition, instructive, and fine in mechanical and artistic execution. Those different forms show the development of a century. The electric locomotive has been put in competition with that century of development of the steam locomotive and in these few years, really only about twenty years of real development, it has come up to the form of service such as Mr. Wynne has pointed out, far beyond the capacities of the steam locomotive.

Mr. Wynne referred to some of the unexpected things that came with the introduction of the electric locomotive. We usually get down to a very narrow and small comparison, cost per ton-mile, or repairs per ton mile or something like that. Electricity enters into and transforms the whole system of operation. It means many more things. That was a wonderful picture of the electrified transformation of a dirty, smoky, noisy New York City Terminal, which made the values of real estate in that region of the city very low, into one of the handsome parts of the city where the fashionable clubs and apartment houses and hotels are finding a home, some of them right over the tracks—another instance of how the unexpected happens in electrification.

A few years ago there was a strike on the New Haven road. The men in the power station had been very dependable. When the morning came, however, and the hour neared for the announcement of the strike, the electrical engineer thought it might be better to be in the neighborhood of the power house, so he took a train down to Cos Cob, some forty miles away. A little later a telephone message came in saying that the switchboard men in the power house and the repairmen were going out and asked whether they should leave the machinery running or shut it down before they left. The inquirer was informed that the electrical engineer was on his way down. "All right," he told the men, "we'll leave her running." They left the power house and passed the electrical engineer who had just gotten off the train and was coming into the power house. The electrical engineer and a few men he could get together right away ran the power house and with an improvised force sleeping in cots and living right on the job, that power system was kept running. The line men left, but the line was kept in repair. The electric wires were of the same nature as wires in other places and electricians from other companies came in to help and so that service was kept up. When a steam locomotive goes wrong it means that the whole locomotive must be taken out for extensive repairs, covering considerable time, by a type of expert workmen, boiler makers and the like, who are not available when a strike is on. But if the electric locomotive went wrong, the defective part, whatever it was, could be unscrewed and taken out and repaired on the ground. or taken away to the electric shop and a substitute put in place, so that the whole locomotive, with the replacement of a small part, could be kept available. And this type of repairs does not require experts such as boiler makers, but rather the common sort of garden variety of electrician.

The electrified section runs up to New Haven and then the road branches off into many branches. It is the neck of the bottle for all New England. I was told by one of the officers of the road that it was recognized by the officials that it was the electrified section that really saved the service of the New Haven road during the strike.

I remember in my college days an oratorical contest. One of my friends found as an argument for some profound question he was discussing, a statement by an English statesman that the unexpected effects of a new law more often exceeded the anticipated results. So with electrification. If we look for results in the narrow, simple way of simply a change of motive power, I think we will make a mistake. And we may find that the unexpected advantages of electrification exceed those which were anticipated.

PRESIDENT: We would be glad to hear from others who desire to ask questions or enter into discussion of the subject.

MEMBER: I would like to ask two or three questions. What is the maximum D. C. voltage trolley system?

MR. F. E. WYNNE: A small line in Italy uses 4,000 volts, but the maximum widely used is 3,000 volts.

MEMBER: What is the maximum A. C.?

MR. F. E. WYNNE: There are a number of lines at 16,500 volts. The highest in this country to date is 11,000 volts.

MEMBER: Is it true that the Europeans mostly multiphase trolley systems?

MR. F. E. WYNNE: No, that is confined practically to Italy. Other countries of Europe, as Sweden, Germany, Norway and Switzerland, use single phase. England (with one exception), France and one road in Spain use direct current, either low or high voltage.

MEMBER: Is the Italian railway system as developed in multiphase or are they running single phase in modern installations?

MR. F. E. WYNNE: They are just now somewhat undecided. They have a large three-phase system all through the north of Italy. It operates at 16 2-3 cycles. In the south of Italy all the power supply is at 46 cycles. They are experimenting with three phase at 46 cycles and also with high voltage D. C. to determine what should be done in that part of the country.

MEMBER: They are not changing from three to single phase?

MR. F. E. WYNNE: No, I have heard nothing of that yet.

MR. A. E. ANDERSON: There are two questions that occur to me on this illuminating and comprehensive statement of the progress in the use of electricity. The first is on the question of the comparison between the reciprocating torque in the steam locomotive with the different angles of the engines on each side of the locomotive which gives more power on one section of the revolution than it does on the whole revolution, the comparison of that with motor direct connected where there would be a continuous torque, as against the reciprocating engine which twice in each revolution goes from no power at all to extreme power. I always watch a locomotive with the greatest admiration to see how quickly the steam must act to exert the great power it does when at two points in the revolution there is no power at all, from the dead centers to full angular power off the revolution, with the almost instantaneous action of the steam.

In the pictures of the electric locomotives as developed with the connecting up by rods of the driving wheels with the jack shaft, as far as I could see, it is getting back to the reciprocating motion of the connecting rods on the steam locomotive.

The next question is whether experience has shown that there has been developed an efficiency greatly beyond where the electric power can be operated with economy. With the heavy weights hauled by steam locomotives and with the heavy locomotives themselves, where we have the great weights to be carried grades must be kept within the constitutional requirement we hear so much talked about now of one-half of one per cent. It cannot exceed one per cent in any event and the engineers try to keep it down to one-half per cent, if possible. If it goes byond that it increases the operating expense. The speaker described how these electric locomotives work up to two per cent, and for passenger service it runs up, as I understood it, in the Hudson and Manhattan Tunnels, to five per cent. Is there a margin between that two per cent and five per cent of load and power beyond which for freight service it would not be efficient to go, even though we have power to do it as has been described?

MR. F. E. WYNNE: In answer to your question about the reciprocating motion, you will notice that the moving element of the electric motor has a uniform turning torque. To get that to the wheels it may be direct geared, which gives a uniform torque through the pinion and the gear down to the axle and wheel. When the jack shaft and side rods are introduced, each element in the drive system also moves in a circle. However, with the arrangement of rods which you saw, there is a shifting of driving power from one side of the locomotive to the other, but there is no reciprocating action such as you get with a steam locomotive.

As to the economic limit of grade with electric power, I think no one has yet analyzed that question to a point where we can say what it is. There have been analyses made and estimates indicating that you can afford to go to heavier grades with electric power than with steam. In one or two instances railroad engineers have estimated for new lines that they could afford to put in a line with a maximum of, perhaps, 50 per cent to 75 per cent heavier grade than would be economical with steam. They also figured that by using heavier grades with electric locomotives they could save enough in the building of the road to pay for the electric installation.

MR. D. J. REDDING: Following the last question, what advantage does the reciprocating jack have over the motor mounted directly on the axle, if any?

MR. F. E. WYNNE: Certain types of motor require the minimum number of motors on the locomotive. Where you want to drive from just a few motors, you may use two with rods instead of four or six or eight with individual drive. The side rod has been applied principally in order to simplify control and use the minimum number of motors. Certain advantages go along with that. As ordinarily built so far, the locomotive which has drivers geared together may not slip quite as easily as if each driver were driven separately. But there are certain elements of weight transfer, which tips trucks, entering that are capable of being overcome with axle hung motors and we have on the board at the present time a design of locomotive with axle-hung motors which will give better adhesion conditions and less of this weight transfer than is developed by any type of locomotive yet built. But the principal excuse for the side rods is to minimize the number of motors.

PRESIDENT: Is Mr. Crawford in the room? We would like to hear from him.

MR. D. F. CRAWFORD: Mr. Wynne's paper has been particularly interesting and particularly instructive to me because he did not raise the question that has been raised so frequently in discussions, of the relative merits of electric and steam traction, that is, greatly depreciating the value of the steam engine and greatly magnifying the value of the electric locomotive.

It so happens that reference has been made tonight to the centennial of the railroads in the world. I had the pleasure in 1922 of inspecting the locomotive used on the Stockton and Darlington Railroad when it started in September, 1825. It has also been my fortune or misfortune to have been associated with the motive power on railroads of this country from 1885 or something like that and also to have followed the electric development, starting with personal inspection and riding on the B. & O. locomotive referred to the year it was installed. All he has said bears out and confirms exactly the development as it has appeared to me. I have ridden on a number of electric locomotives in this country; also some in Switzerland and some in Italy. The thought that has been expressed here, that the electric problem is more than a motive power problem, is one that has appealed to me from my first experience with electric traction, which was in 1895 and about the time the B. & O. locomotives were installed, and that is that it is not a question of relative fuel economy, it is not a question of locomotive repairs, but what it would mean to the entire operating conditions. There is no question that electric traction will come, and it is going to say very plainly where it is going to come first. It is already evident that it wants to be used first in such places as tunnels and terminals where the advantage will not be a question of locomotives, steam or electric, but what can be gotten out of the investment made in track and other terminal facilities.

I know from my own experience in riding locomotives what has been accomplished in the way of increased tractive power and speed, which is a most valuable feature of the electric locomotive. As Mr. Wynne has pointed out, the boiler limits the steam locomotive. But when you can put any number of boilers on the ground and transmit the power over a wire to a motor, you can take advantage of the increased tractive power. The experience of the Virginian Railroad with very excellent steam locomotives, which have given splendid results, which led them to look to their abandonment, and the introduction of electric traction, is simply a realization that the electric motor will give them more power at high speeds, thus reducing the necessity for additional tracks.

I am sure it has been a very great pleasure to me to have had the opportunity of hearing this paper and renewing the acquaintance of some of my old friends that were shown on the screen.

MR. C. O. DAMBACH: I was in hopes that the speaker, or some of our distinguished guests who have followed him, would dwell a little longer on the question of costs. I appreciate that Mr. Storer has his contracts ready to be signed on the dotted line, but operating officials are naturally interested in a comparison of costs as between steam and electrification. There is no dispute as to the practicability of electrification. There is no dispute as to the practicability of electrification in New York City, where the reclamation of valuable property was involved, and it would appear that electrification is also justifiable where heavy traffic on severe grades is an issue, but it would be interesting to know how the ton-mile cost of an average road would compare as between electric and steam power.

MR. F. E. WYNNE: That is another general question to which it is possible to give a general answer. It is largely a matter of the density of traffic. You can work out comparative costs of operation for a road that has rather thin traffic, like some of those which have been electrified, and find that, perhaps, the electrification would carry the interest on the investment and nothing more. You might go to a road that had very dense traffic, such as the Norfolk & Western or the Virginian, five years hence, and possibly some day even to the Pennsylvania, over the mountains and get quite an amazing result on the economies in actual cost of operation. The question has no general answer. The biggest element in making it pay in operating costs is how dense is the traffic. I think possibly you would find it worth the investment from that standpoint alone where you are handling 30,000 or 40,000 tons of freight daily over your single or double track road. With such daily tonnage or greater, you will find things that are interesting to you.

MR D. J. REDDING: As there seems to be no further discussion, permit me to say that I feel that we have been wonder-fully entertained tonight with the story and pictures showing development of the electric locomotive and it is apparent to all of us that this electrification is making very rapid strides. Possibly the road I am with may not electrify for many years. We get along very well with steam equipment, and are able to show very good figures, low cost of fuel per mile and fair earnings per mile; but if the Pittsburgh district continues to grow, we may reach the limit for steam operation. We have the rivers on one side and hills on the other, and it is possible we may not be able to put down all the tracks needed in the event of such growth, and may reach the limit for steam equipment on our railroad, however, we have not reached that point yet. The facts as brought out in this paper, that so many steam railroads have found it advisable to invest large sums of money in electrification, make it very apparent that there is a well-defined field for the electric locomotive, and no doubt this field will continue to broaden as time goes on.

I want to move a vote of thanks to Mr. Wynne for his very excellent paper and to the gentlemen who have taken part in the discussion.

(The motion prevailed unanimously by all members rising.)

There being no further business, upon motion the meeting adjourned.

(Owing to the extensive program for the evening, the President refrained from oral presentation of the following paper).

FREIGHT RATES AND COMMERCIAL DEVELOPMENT.

By GEORGE D. OGDEN

Fellow Members of the Railway Club of Pittsburgh:

At last month's meeting, as you will recall, the President's talk was devoted to a discussion of the general freight rate structure in the United States. An endeavor was made to show how this structure was created, in the course of several generations, as a result of competition and the interplay of practically all the social and economic forces which have gone into the upbuilding and development of the United States. It occurred to me that possibly it might be of interest to pursue the same subject a little further, though from a somewhat different viewpoint.

As all of us know, freight traffic constitutes the financial backbone of our American railroads. I do not mean to disparage the passenger service. We all realize its vital necessity to the country, and I think we are reaching a better understanding than we had in former years, how to make passenger traffic contribute its fair share of the total revenues. However that may be, three-quarters of the gross earnings of American railroads are derived from freight service, and it is more than conservative to say that at least that proportion of their net return, after the payment of operating expenses, must continue to come from the same source. Hence, the protection of the freight receipts and the maintenance of a generally adequate level of freight rates, are absolutely necessary measures of self-preservation in the policies of our railroad managements.

It is, therefore, a serious matter that our freight rates should be the center of attack against which most of the political or radical assaults upon the railroads are delivered. Since Congress was called together last December, there have been approximately 200 bills introduced affecting the railroads. The great majority of these proposed measures are aimed at effecting a reduction of railroad revenues, by either directly or indirectly pulling down the levels of freight rates.

In view of the persistence of these efforts, and the serious and deplorable results which they threaten, it is worth while to take a broad view of the matter and endeavor to see just how the people of this country are faring generally in respect to the charges for railroad freight service. What is the true situation? The answer in the fewest words is this:

We are the richest country in the world. We have the highest standards of living and the graetest abundance of luxuries of all kinds. We are the freest spenders in the world for all purposes, useful or otherwise. Yet, the freight rates of American railroads are beyond all comparison the lowest charged by any railroads in either hemisphere. Why should we, of all people, agitate ourselves feverishly about this, the cheapest of our necessities.

The average rate charged for carrying a ton of freight one mile on the railroads of the United States at the present time is just a little over one cent. I do not think it is over-stating the fact in the slightest degree to say that this is the lowest price quoted anywhere in the world today for any commodity or any service of whatever description. In Europe, where the people are far less able to pay high prices than we are, freight rates are from four to six times higher than on our American railroad systems.

I think it may be both interesting and instructive to consider for a moment what that average charge of a trifle over a cent for moving a ton of freight one mile means in terms of human labor. It takes a fairly strong man to stand up under a 50-pound pack for any distance. Most of us—I don't mean athletes or trained soldiers, but just the ordinary average American—would think we were doing the biggest day's work of our life if we staggered along with that burden for 10 miles. At that rate, it would require four days of unaided human labor to perform the amount of transportation service which our railroads render for one cent. The average man in the average physical condition could not do it in four days' time.

At the current scale of wages, the average unskilled worker can buy from the railroads a ton mile of transportation service with about one and a half minutes of his own labor. The average machinist can pay for the service with about forty or forty-five seconds of work, while men in the higher-paid classifications of labor, such as bricklayers, plasterers or others in the building trades who are now enjoying top wages, can pay for their ton mile of railroad service with eighteen to thirty seconds of work.

Comparison of these figures with the effort required to move a ton one mile by unaided human labor, offer a striking illustration of the manner in which the mechanical triumphs of our civilization conserve and multiply the results of individual effort.

Instead of clamoring for lower freight rates it would be far more in order for those who are elected to public office, as servants of the people, to recognize and proclaim the fact that our freight rates are the one thing in this country today which are conspicuously low in price as compared with the average range of all other prices. It is true that our rates are somewhat higher than they used to be, but so are all other prices, and the present level of American railroad rates shows a much smaller advance over pre-war levels than the general average. For instance, the level of freight rates at the present time is only approximately 50 per cent more than it was in 1914, while general wholesale prices are still some 60 per cent higher than in that year, railroad wages about 130 per cent, and railroad taxes 150 per cent.

Moreover, in 1914, the general level of prices had been rising for about 15 years, or say since 1899. It was in that year that the lowest general average for commodity prices was recorded at the close of the more than thirty years' decline which followed the Civil War. Railroad rates were practically the one and only exception to the general upward tendency which began in 1900. They, too, reached their low ebb in 1899, but instead of sharing the improving fortunes of commodity prices, which set in then, stood practically at panic levels not merely until the opening of the World War, but until our country actually entered it as a belligerent in 1917.

Therefore, when comparing the present levels of railroad rates and commodity prices with those of 1914, it must be remembered that commodity prices and wages had already risen considerably in 1914 from their lowest marks, whereas railroad rates had not. This still further accentuates the relative cheapness of American freight rates at the present time.

It would sometimes seem as if some of our law-makers must be obsessed with the strange belief that the great need of the country is not for the continued improvement and extension of our railroads and betterment of their service, in order to pave the way for a greater volume of commerce and additional prosperity, but merely for a further cheapening of rates, heedless of the stunting effect upon railroad development and the Nation's progress.

A rather amusing light was thrown the other day upon one phase of this subject, by the head of the advertising department of one of our largest public utilities interests. There is a Senator in Washington, whom I think most of you will have no trouble in recognizing, who has been a conspicuous leader in the move to reduce rates, particularly on agricultural products. He is also widely known as the owner of an extremely profitable string of farm and agricultural papers. The advertising manager, to whom I have just referred, recently wrote to all of the Senator's papers for quotations on their present rate for advertising space. When he got all of the figures together he found that their present average charge for advertising had been advanced 165 per cent since 1914, or more than three times as much as the advance in railroad freight rates, which the Senator is so zealous in attacking.

The railroads have suffered at the hands of selfish and short-sighted politics for the reason which was expresed long ago in the saying that "Death loves a shining mark." They are, perhaps, the most notable creations of enterprise, courage and foresight of American business. Their vastness is the inevitable fruit of their immene success, but it has made them the biggest and most conspicuous target in the country. When politics scores a hit on the railroads, all the world knows it, and that is chiefly what politics of a certain kind wants. We, who are in the transportation service, or represent the transportation interests of large and important industries, know that what the country wants and needs is better and more railroad facilities, and an expanding service constantly able to meet the necessities of our growing commerce. It is the part of good citizenship for us to preach this gospel whenever the chance offers.

There are few more striking facts in the commercial history of the United States than the constant growth in the calls and needs for railroad service—a growth which continues from year to year and decade to decade at a rate far in excess of the increase in our population. Let us give you a few figures to illustrate my meaning. In the period between 1890 and 1920 the population of the country increased only 69 per cent, but the volume of railroad freight service rendered, measured in tons carried one mile, increased 443 per cent. This means that in three decades the nation's requirement for the transportation of freight grew six and one-half times as fast as the population.

Looking at the matter from a slightly different angle, in 1890, for every man, woman and child in the United States, the railroads carried one ton of freight a little over 1,000 miles, and that sufficed for the needs of the time. By 1920, our living standards and production and consumption per capita had so increased, that the railroads, in order to meet the requirements of the country, were called upon to carry one ton approximately 4,000 miles for each head of population. These increased demands on the railroads become all the more impressive when we consider that in the period in question both the electric railway and the motor car have had their entire rise, adding enormously to the agencies of transportation, without perceptibly slowing down the continuous increases in the demands for steam railroad service. Transportation is in truth the very life blood of the age in which we are living, and railroads are still, and long will be, our most important agencies of transportation, particularly with respect to freight.

So much for the lessons of the past. What of the future? A short time ago a committee of the Chamber of Commerce of the United States undertook to calculate what the railroads would have to spend in the next ten years on new facilities to meet the expected growth of traffic in that period. The Committee was a group of sober-minded business men and handled their problem in the most conservative and matter-of-fact manner possible. Their conclusion was that to meet, with any degree of adequacy, the absolute minimum requirements now in sight, the railroads will have to raise and spend over three-quarters of a billion dollars of new capital every year for the next decade.

Moreover, this amount would provide only for the bare necessities required to handle the increased volume of traffic. It includes no allowance whatever to meet the demands of the public for increased comfort, convenience and safety, for greater speed and frequency of service, or for such matters as elimination of grade crossings, the installation of automatic protective devices, the extension of the block signal system, the proposed adoption of automatic train control, the improvement of the appearance of stations and many other features which add to the attractiveness of railroad service, but do not increase traffic handling capacity or add to railroad earnings.

Nevertheless, the public demand for all of these features is very strong and the railroads constantly find it necessary to meet such demands. Making allowance for this trend of the popular will, with its accompanying social and political pressure, it would surely be extremely conservative to say that if they are to meet all these requirements with anything approaching adequacy, our railroads will have to raise and spend at least a full billion dollars a year for improvements and extensions, not only for the next ten years, but as long as the country keeps on growing at anything like its present rate.

How to raise these immense sums is purely and simply a problem of upbuilding credit and making the railroads once more attractive investments for those who have savings to put to work. To solve this problem the railroads must be allowed to make better net returns than have been permitted to them for many years past, because the private investor's dollar must be persuaded it cannot be commandeered. In the last 16 years not once have the railroads been permitted to earn as much as 6 per cent on their total investment in road and equipment. The average for that period has been less than 4 per cent. At present the Interstate Commerce Commission is experimenting with the theory that a return of 5 3-4 per cent would be sufficient to attract new capital, but even that figure has not yet been realized. Last year, with the greatest traffic on record and with the general prosperity and spending power of the nation at the highest point ever known, the railroads earned just about an even 5 per cent upon the investment in the properties devoted to public service.

In 1917, the year we entered the World War, the net railway operating income—that is the sum left after the payment of operating expenses and taxes—for all Class 1 railroads was $934,000,000. In 1923 it was approximately $970,000,000. Meanwhile, three and one-half billions of dollars had been spent upon the railroads for improvements and extensions. It will thus be seen that the investment of that immense sum of new capital brought practically no increase in net operating income even though, as I stated a moment ago, 1923 was the year of high record traffic and the greatest prosperity and spending power of the nation's history.

I think we may all safely agree that it will be an exceedingly difficult, if not an impossible, problem to keep on constantly raising billions of new capital unless the railroads are permitted to show more attractive and higher rates of earning than those just cited. It would certainly be an impossible problem in any line of individual enterprise, and the railroads, despite their size, and the public character of their service, are subject to just the same principles of business management and necessity as any other forms of enterprise.

In 1923 not only did the railroads, by stupendous effort, render the greatest service to the country in their history—and render it well and efficiently, too—but they also assumed the greatest new obligations ever recorded in any year for improvements. The total for the 1923 program of improvements and extensions was $1,100,000,000. Practically all of this great sum was raised in the form of borrowed capital secured by further mortgages and pledges upon the property. Practically none of it was raised in the form of capital stock. We cannot go on mortgaging a business forever to make its facilities grow. That is no more possible in railroading than it is in manufacturing or merchandising. To bring about a healthy condition in railroad financing, we must make it again possible to raise at least 40 to 50 per cent of all new requirements in the form of capital stock, so that the total mortgages upon the properties shall never greatly exceed 50 per cent of the entire investment. Every well-informed man knows that when we materially pass that mark, we are venturing into the unsound.

The reason why the railroads generally could not finance a substantial proportion of their needs last year, or indeed for a decade or more in the past, by issuance of new capital stock, was that the public did not feel satisfactory assurance that fair dividends could be safely earned upon the additional stock. In this connection it may be interesting to take a glance at the course of dividends in the last ten years and compare the dividend payments with the tax burdens which have been increasingly levied upon the railroad companies. In 1913 the tax bill of the Class 1 railroads was $118,000,000. In that year the companies were able, after meeting all other bills, to pay their stockholders $322,000,000 in dividends. In 1922 the railroad tax bill had increased to $320,000,000, while dividends had declined to $272,000,000. In other words, in ten years the burden of railroad taxes increased 150 per cent, while the returns to stockholders decreased 18 per cent, in spite of an enormous increase in the volume of service rendered and the billions of new capital put into additional facilities necessary to render that service.

In 1923 railroad taxes rose to the stupendous sum of $336,000,000, or practically a million dollars for every working day of the year. In 1924 there is every indication that they will reach, or exceed, $366,000,000, which is over a million dollars for every day of the year, including Sundays and holidays. In discussing this subject a short time ago, Mr. Samuel Rea, President of the Pennsylvania Railroad, said:

"The excessive taxes now borne by our railroads are, of course, only one phase, though a very important one, of a nation-wide condition. They afford a startling reflection of the extravagance in the conduct of our Federal, State and Municipal affairs, and the stupendous cost of carrying on government and governmental projects in this country."

That is a view with which all citizens can thoroughly sympathize.

To provide a broader basis for railroad credit, which is essential to continued growth and progress of the railroad industry we must, as I have endeavored to indicate, have a more liberal basis of net earning power. The answer will be found in patience and caution in dealing with the rate structure and particularly with freight rates, in mitigating the tax burden, and in the sane and sensible handling of railroad wage and labor questions. These all gravitate finally into the need for more constructive and helpful policies of railroad regulation and railroad law-making.

Those of us who are in the railroads, or who represent the transportation interests of the industries, must make ourselves missionaries in this cause. We have on our hands a tremendous job of salesmanship. We must "sell" to the country and to its law-makers and regulative commissions the truth that the great need of the United States is not for a ruinous lowering of transportation rates, but for more and better railroads, for a constantly improving railroad plant and continually advancing standards of courtesy, promptness and dependability of service. We must "sell" these truths, also, to the great mass of our fellow-workers in the railroads.

The reputation of American railroads is in the hands of their employes. Ultimately, it is in the hands of the men who deal directly with the public or who perform the labor upon which the safety, comfort and convenience of the public depend. One careless shop-man may cause an engine failure which may delay hundreds of people from meeting important engagements. When he does that he makes hundreds of enemies for his company and for the railroads in general, and their dissatisfaction and hostility will be far more difficult to cure than to create. One discourteous conductor can make an entire train load of passengers bristle with resentment. One negligent car inspector can allow a hot journal to delay a limited train with the result that many people who have paid an extra fare for high speed and superior service are disappointed in the promises made to them. One careless trucker on a station platform may damage fragile and valuable shipments, and cause hundreds or thousands of dollars in claims, besides losing the goodwill and confidence of shippers.

We must 'sell" the public on the magnitude and importance of the railroad industry, not only as the servant of all other industries, but in its capacity as a vast buyer of the nation's product and an immense employer of labor. Last year the expenditures of the railroads in the United States exceeded six billions of dollars. Of this amount, three billion dollars went into wages of railroad employes, two billion dollars into the purchase of fuel and supplies for current consumption, and more than one billion dollars into improvements and extensions. Think what these expenditures mean to the commerce of the nation and to its wage earners. Is it not indeed of the utmost importance that this vast spending power—all of it directed into useful and beneficial channels—should not be selfishly or narrowly curtailed, hampered or restricted?

In normal years the railroads use one-fourth of all the coal mined in the United States; one-fourth of all the lumber; thirty to forty per cent of all the steel and iron and one-half of all the fuel oil. In the case of many other basic commodities they stand at, or close to, the top as buying factors. These are facts which we should not only know ourselves, but which we should never lose an opportunity to bring home to others. The industries of America cannot afford to cripple their best and greatest customers.

This may all be summed up in the statement that railroad rates, and especially the rates charged for freight service, must be sustained at adequate levels and protected from selfish and unwise attacks, until railroad credit is fully restored and railroad prosperity permanently assured.

Good transportation is worth to the country, and to every manufacturer, business man, farmer, or other citizen, all that it costs, including a fair return to those whose savings have built the railroads, and a reasonable margin over all expenses to assure the attraction of new capital when needed. Poor transportation service is never cheap at any price, regardless of what may be done with rates. The cheapest transportation service is that which moves the traffic promptly, certainly and swiftly when desired. The dearest transportation service is that which fails in the hour of need, no matter at what levels the rates may be nominally quoted. This country needs the best and most progressive service, and can never afford to be content with less.

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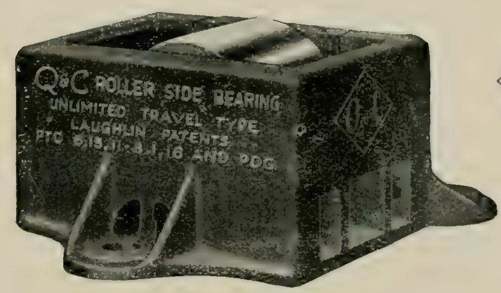

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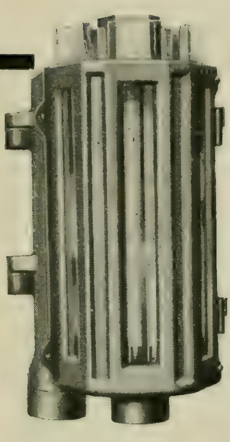

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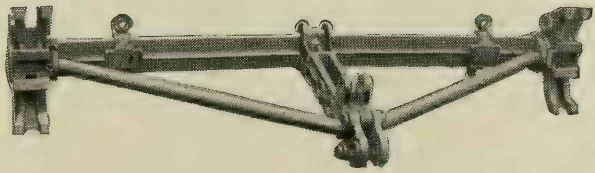

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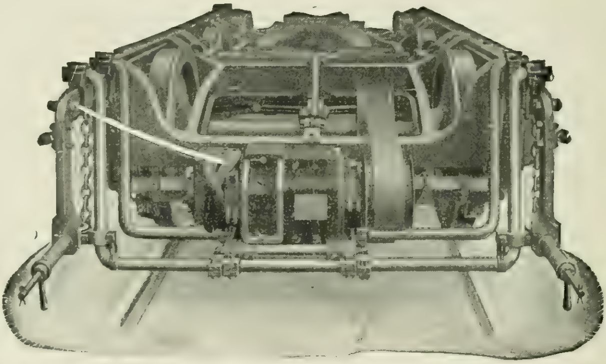

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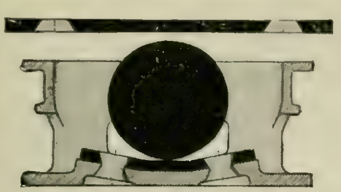

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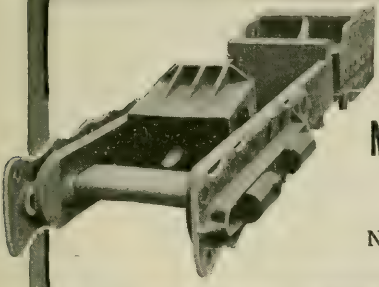

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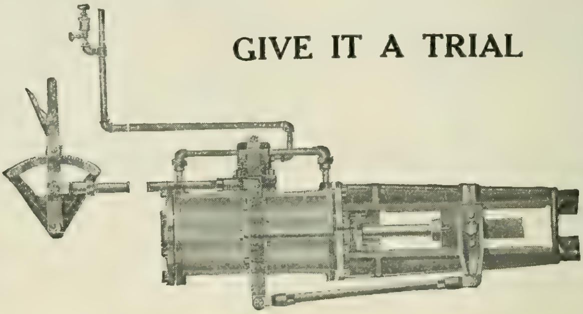

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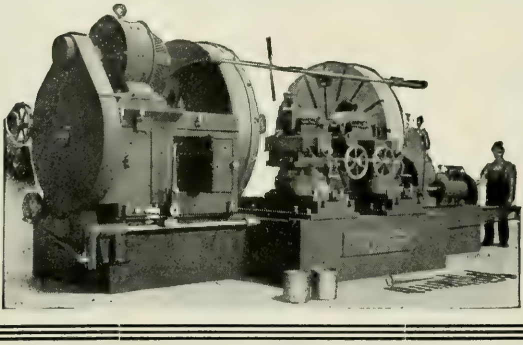

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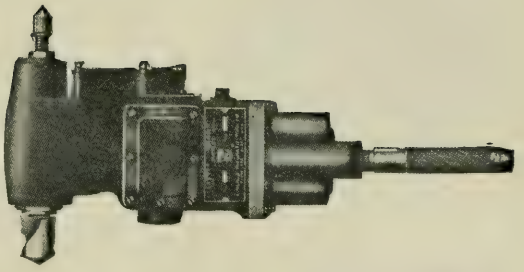

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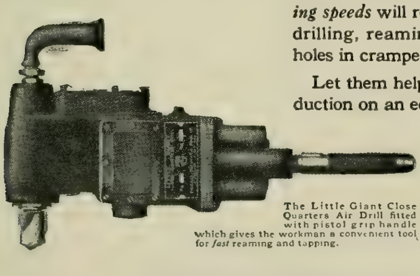

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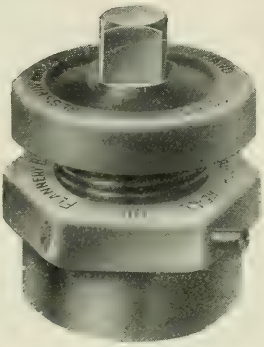

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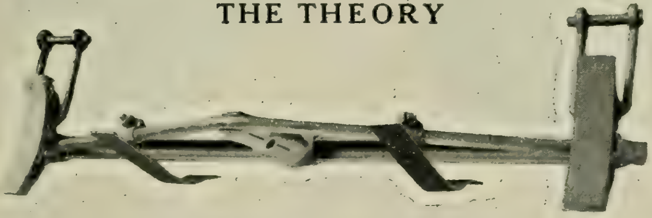

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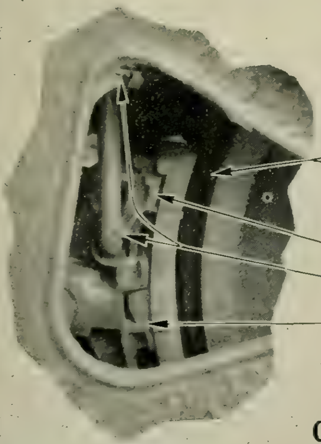

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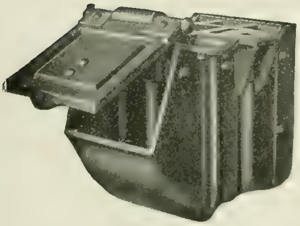

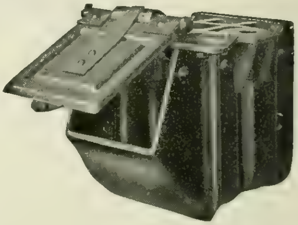

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*H. W. WATTS	November, 1907, to April, 1908
D. J. REDDING	November, 1908, to October, 1910
F. R. McFEATTERS	November, 1910, to October, 1912
A. G. MITCHELL	November, 1912, to October, 1914
F. M. McNULTY	November, 1914, to October, 1916
J. G. CODE	November, 1916, to October, 1917
D. M. HOWE	November, 1917, to October, 1918
J. A. SPIELMANN	November, 1918, to October, 1919
H. H. MAXFIELD	November, 1919, to October, 1920
FRANK J. LANAHAN	November, 1920, to October, 1921
SAMUEL LYNN	November, 1921, to October, 1922
D. F. CRAWFORD	November, 1922, to October, 1923

*—Deceased.

Meetings held fourth Thursday of each month except June, July and August

PROCEEDINGS OF MEETING

MAY 22, 1924

The meeting was called to order at the Fort Pitt Hotel, Pittsburgh, Pa., at 8 o'clock P. M., Vice President A. Stucki in the chair.

The following gentlemen registered:

MEMBERS

Adams, L.
Adams, W. A.
Anderson, A. E.
Anderson, J. W.
Austin, F. S.
Barrett, R. L.
Bartholomew, W. S.
Berghane, A. L.
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Crenner, Jos.
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Dierker, R. H. L.
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Freshwater, F. H.
Fults, J. H.
Glenn, J. H.
Goda, P. H.
Greene, W. F.
Hansen, W. C.
Harris, J. P.
Hasper, W. C.
Haynes, J. E.
Hoover, J. W.
Hoover, R. C.
Hornbeck, W. E.
Howe, D. M.
Howe, D. M., Jr.
Huber, H. G.
Hulick, E. G.
Hyde, W. B.
Johnston, W. A.
Jungbluth, Adolph
Kelly, Leo J.
Kummer, Jos. H.
Laughner, C. L.
Laurent, G. F.
Lee, L. A.
Lehr, H. W.
Leonard, P. J.
Lobez, P. L.
Long, R. M.
Luddy, W. E.
Ludwig, C. F.
Lynn, Samuel
Maliphant, C. W.
Matchett, H. K.
Meeker, H. B.
Meschter, E. F.
Milliken, J.
Mitchell, W. J.
Moore, D. O.
Moyer, Oscar G. A.
McKirahan, J. R.
McNulty, F. M.
Neff, John P.
North, D. P.
O'Brien, M. J.
O'Connor, M. J.
Orchard, Chas.
Painter, Joseph
Parke, F. H.
Parker, W. G.
Patterson, J. E.
Peoples, J. S.
Perkins, H. E.
Posteraro, S. F.

Rabold, W. E.
Redding, D. J.
Renshaw, W. B.
Ritts, W. H.
Roberts, J. E.
Robinson, R. L.
St. Clair, Chas. B.
Saltic, Thos.
Sattley, E. C.
Schramm, R. L.
Scott, J. C.
Shellenbarger, H. W.
Sheridan, T. F.
Sparks, Hynes
Staman, H. Z., Jr.
Stark, F. H.
Steigerwald, H.
Stucki, A.
Sutherland, L.
Taiclet, J. A.
Tipton, G. M.
Thompson, L. D.
Tucker, John L.
Walther, G. C.
Williams, W. G.
Winell, K. O.
Wirth, F. A.
Wright, John B.
Young, F. C.

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Bridge, Jas. W.
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Culp, M.
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Vollmer, K.
Yant, William

The call of the roll was dispensed with, the record of attendance being obtained through the registration cards.

The reading of the minutes of the last meeting was dispensed with as they are to appear in printed form.

The Secretary read the following list of applicants for membership:

Godfrey, C. H., Dist. Service Engr., Franklin Railway Supply Co., 1612 Clifton Blvd., Cleveland, O. Recommended by R. M. Long.

Matchneer, William W., Sales Dept., The Buckeye Steel Castings Co., So. Parsons Ave., Columbus, O. Recommended by J. A. Ralston.

O'Connor, C. D., Asst. Supt., Aliquippa & Southern R. R., Woodlawn, Pa. Recommended by W. F. Ambrose.

Wallace W. E., Asst. Supervisor, P. & L. E. R. R., 452 Motheral Ave., Monessen, Pa. Recommended by Sam A. Damore.

Whitridge, J. C., Vice Pres., The Buckeye Steel Castings Co., So. Parsons Ave., Columbus, Ohio. Recommended by J. A. Ralston.

Wirth, F. A., Gen. Sales Mgr., Carbo Oxygen Co., 223 Fourth Ave., Pittsburgh, Pa. Recommended by J. E. Haynes.

VICE PRESIDENT: As soon as these applications have been approved by the Executive Committee, the gentlemen will become members upon payment of the years dues.

Announcment was made of the death of Mr. A. R. Thurlby, Road Foreman of Engines, P. & L. E. Railroad Co., who died February 16, 1924.

VICE PRESIDENT: Appropriate memorial will appear in the Official Proceedings of the Club.

If there is no further business, we will proceed to the paper of the evening by Mr. William P. Yant, Assistant Gas Chemist, Pittsburgh Experiment Station, United States Bureau of Mines, who will talk upon the subject "Gas."

(The paper was preceded by a very interesting moving picture, entitled "The Story of Gasoline," illustrating the manufacture, etc., of gasoline.)

"GAS"

By William P. Yant

For the little talk which I will give you this evening, I will discuss three things which I think you might be interested in—things which pertain more or less to your every-day life. The first of these is the gases we find in mines, the second the poisonous gas from gas stoves, and the third, automobile exhaust gas and how to get rid of it in tunnels and garages.

Normal air, as you know, contains about 21 per cent oxygen, the constituent we need to support life, and the balance for all practical purposes we may call nitrogen. Although this is the air with which mines are ventilated, nevertheless certain contaminations of this arise from several sources. In case of a fire in the mine, which is not an uncommon occurrence, the fire consumes some of the oxygen, lowering its content in the air and in turn liberates carbon dioxide, carbon monoxide and hydrogen, together with a few other gases of a hydrocarbon type. In other cases, the air may be merely contaminated with methane or firedamp, which though not poisonous itself, may increase until it excludes the oxygen below that which will support life or with a less amount it may form an explosive mixture about which I shall say more later. Another cause of lowered oxygen is the absorption of it by the coal or the formation of carbon dioxide, which again lowers the oxygen similar to methane.

The most vital contamination of mine air comes as a result of an explosion, of which we have two types; one from a gas accumulation and the other from dust and the latter usually being ignited by a small gas explosion.

A pure gas explosion arises from an escape into the mine of methane or fire damp, which is in a large measure, similar to natural gas. When an amount sufficient to cause a concentration of approximately five and one-half per cent accumulates it forms an inflammable mixture which can be ignited by any open flame as carbide lamps, match, etc. When this burns or explodes it forms carbon dioxide, carbon monoxide and water lowering the oxygen in so doing. In this type of explosion, which usually is not of comparatively great extent, some men are killed by violence, but most of the victims are a result of the carbon monoxide formed during the burning of the gas.

The other type of an explosion is that which comes from an ignition of the coal dust. Any combustible matter, that is, matter which will burn, will, if in fine enough particles and mixed with air, form an explosive atmosphere. This is the cause of starch mills blowing up. With gas explosions the area affected is more or less confined to that wherein the accumulation of gas occurred, whereas with dust explosions there is nearly always sufficinet dust present in all the ribs and along the tracks to form an explosive mixture and this kind of an explosion which usually starts by a small gas explosion stirring up and igniting the dust, after which it progressively stirs up more dust until there is a selfpropagating explosion which may go to almost every section of the mine. The products of contamination of this type are similar to those from gas, and again the most victims are from gas poisoning, although violence is an increased factor. An explosion of this type was the kind that recently occurerd at Benwood, West Virginia, in which 115 to 120 lost their lives.

Since carbon monoxide is the gas that does the most damage in mine explosions as well as in the gases from stoves and also in automobile exhaust, it might be well for me to give you a picture of carbon monoxide poisoning. The power in your limbs, your thinking, and in fact all your energy comes from burning food or fuel in the body much the same, but slower, as a boiler burns coal. In this process there is a constant need of oxygen in the tissues and in order to get it there the oxygen of the air enters the lungs, diffuses through the thin lining separating it from the blood, and the latter, in turn, hauls it to the tissues by way of the blood stream. Its medium of travel is the little red blood cells, or more specifically the hemoglobin or red coloring matter of the blood. We can liken each little blood cell to a vehicle which comes to the lungs, gets a load of oxygen, hauls it to the tissues and returns for another load, this being the endless process for the supplying of oxygen to the tissues, brain, etc.

When we have carbon monoxide present the story is a different one. So to speak, carbon monoxide likes hemoglobin or these little vehicles three hundred times as well as oxygen, or in other words, the competing power of carbon monoxide for a ride is approximately 300 times that of oxygen. Thus, but a small amount of carbon monoxide is able to steal a large number of rides. But that is not all, when the blood cell has hauled its load of carbon monoxide to the tissue, the tissue has no use for it and the carbon monoxide literally refuses to get off and the little cell hauls it round and round, and thus becomes incapacitated for hauling any oxygen. In truth, some of the cells unload their carbon monoxide when they get back to the lungs, but during exposure a larger amount practically always loads up with it. Soon there are so many of the vehicles hauling carbon monoxide that the victim hasn't enough hauling oxygen to supply him with the amount of the latter that he must have. This amount that he must have is further influenced by the amount of energy he needs at that time. If he is exercising he will need three or nine times as much as he would if he were sitting still and consequently with exercise he would be a great deal sooner affcted with a certain amount of blood-hauling carbon monoxide when exercising than when resting.

If the exposure is to a sufficient amount of carbon monoxide in the air so that its competing power exceeds to a certain degree that of the oxygen and this exposure continues a condition will result under which more and more of these cells will be carrying carbon monoxide and the victim will begin to get weak, followed by collapse and unconsciousness, as the brain is quickly affected by lack of oxygen. When the point is reached when 20 per cent is hauling carbon monoxide and 80 per cent oxygen there will be an oxygen deficiency sufficient to cause headaches, when the proportion is 40 carbon monoxide and 60 oxygen, an average victim gets dizzy and nauseated. At 50 per cent of each unconsciousness may ensue and when 70 per cent is combined with carbon monoxide, death may occur. The 30 per cent of cells hauling oxygen is not enough to keep a man alive and he dies from the want of oxygen, similar in a large measure to the condition if he had been strangled or choked.

The redeeming feature about this type of poiosoning is that if a victim is brougbht out into the fresh air he will, if breathing, begin immediately to eliminate or throw off carbon monoxide, the cells unloading their gas at the lungs, and there being none in the air breathed, not all those cells will become loaded up again and in approximately ten hours the blood will be practically free to again haul oxygen. This happens to a certain extent with air which is approximately 21 per cent oxygen, but to a greater degree if a treatment of pure oxygen (99.5 per cent). This increases five times the possibility of oxygen getting into combination with hemoglobin or the red cells and decreases the time necessary to clean the blood of carbon monoxide.

This is an important factor because the most damage in carbon monoxide is done to the brain, due to oxygen deficiency. If this continues for a long enough period, there will be tissue damage and semi, if not permanent effects. If the oxygen is given immediately so that the victim is not laboring but a short time under this oxygen deficiency, recovery will probably be immediate, but if the unconsciousness has extended over several hours, as is often the case, sufficient damage may be done that it will require weeks for recovery, if at all.

Just what amount of carbon monoxide in air will be required to produce these effects depends on the duration of exposure and the extent of exercise. Neglecting the last factor and assuming conditions rest for all, as little as 0.04 per cent carbon monoxide in air will produce disagreeable effects, but not unconsciousness after several hours of exposure; 0.10 per cent in air may in time cause unconsciousness; 0.15 to 0.25 per cent generally causes the most severe cases of poisoning, requiring a long time for recovery, as they will keep a victim in an unconscious state for hours, thus allowing the effects of oxygen deficiency to accumulate. Amounts somewhat lower than this do not cause such a profound asphyxia, while with those higher the victim is usually dead.

Passing on now to the causes of poisoning from gas stoves, the contributing factor is the same as before, namely, carbon monoxide. In the Pittsburgh district the gas is at least in the mains feeding the Bureau of Mines Building, pure natural gas of some 85 to 90 per cent methane and the balance (with exception of about 1 per cent nitrogen ethane. To completely burn this it requires the oxygen from approximately ten volumes of air, or in other words, one cubic foot of Pittsburgh natural gas requires approximately ten volumes of air to burn it completely to water and carbon dioxide (remember this is not carbon monoxide). (Carbon dioxide is relatively harmless, there being about five per cent normally in the lungs). Suppose the amount of air that one cubic foot of gas can get is less than ten? What happens is that some of the carbon of the natural gas only gets half of the oxygen it needs for complete burning, and as a result, some of it is given off as carbon monoxide along with the other, which gets all the oxygen it wants and comes off as the relatively harmless carbon dioxide (CO2).

The proper introduction of this required amount of air to the flame at the proper place during combustion is virtually the secret of all gas-heating appliances, without it not only is considerable heat lost, due to incomplete combustion, but also, as has been stated, carbon monoxide is liberated. One type of stove with which all are familiar is the yellow-flame type, in which the gas issues from small holes and burns in small tongue-like flames, depending for its oxygen or air on the free access of the latter around the individual flames. This type of stove is among the safest types so long as the flames burn free and do not impigne on a metal or other surface which will cool them or prevent oxygen from being accessible at side or part, thus depriving it of its required amount of oxygen at a point where it is still hot enough to burn. The other type of stove of which the radiant is now the popular one, depends on its supply of oxygen from (1) by injecting a certain amount in the burner before the gas is burned and (2) by infiltration through the openings in the radiant after the flame starts to burn.

The space necessary to burn gas in a stove of this type will depend on how far the flame travels before it gets its 10 parts of air. If a small amount is introduced by the injector a larger amount will be depended on from the infiltration and the flame must go farther to get it, in some cases being cooled below a burning temperature before it gets it and CO results, while, if practically all 10 volumes are injected into the burner combustion is rapid and complete, but a short distance above the burner openings. Now all manufacturers make practically the same size stove and they have more or less the same ratings in cubic feet per hour at a given pressure. Certain stove manufacturers design their burners to inject nearly all of the required 10 volumes and consequently do not have to depend on infiltration of air through the radiants. In these stoves there is rapid combustion near the burner port (the place from which the gas issues into the bottom of the radiant), and the flame does not travel very far before combustion is complete. These stoves constitute the safest kind of this type and little trouble has been experienced in their use excepting where the oriface or hole where the gas issus from the gas line into the burner has been too large, thus permitting a gas rate when wide open, that the stove is unable to burn—just a plain case of over-loading the appliance.

On the other hand, there are many stoves on the market, which inject into the burner but four or five volumes of air and have to depend on the other five or six to mix with the gas while it burns. In order to do this, the flame must extend upwards until it gets that air and with high rates it may not have its full 10 volumes even when it reaches the top, the result of which the flames burn out the top of the radiants. This burning out the top is a dangerous condition, as almost always some of the ga slips away but partly burned, or in other words, as carbon monoxide and soon the air of the room is contaminated. In most cases this contamination is only sufficient to cause headache and nausea, but quite often it is great enough to cause death, especially to those sleeping and who do not experience the warning symptoms, as headache and nausea, but pass on into the stage of unconsciousness.

Although certain stoves are apparently safe from the standpoint of liberating carbon monoxide, to burn any stove in a room without ventilation by flue, a partly open window or other means of getting in fresh air, and to take the combustion products out, is bad practice. Even though the stove does not give off carbon monoxide it uses up the oxygen of the air and gives off water vapor and carbon dioxide, both of which, although not immediately poisonous in the amounts that would present nevertheless they would contaminate the air in a room to the point of uncomfortability and unhealthiness.

Of the topics I outlined to discuss there yet remains that of automobile exhaust gas and how to get rid of it. The exhaust gas coming direct from the exhaust pipe of an automobile engine, on the average, contains seven to seven and one-half per cent of carbon monoxide. Some may be down to three per cent and others nine or ten, but the average will be somewhere around seven. This is exceedingly dangerous concentration in the light that 0.2 per cent will cause unconsciousness after an exposure of 30 to 45 minutes and death several hours later; 0.5 per cent will kill in around ten to twenty minutes, or in other words, the average automobile exhaust, is on the average, 14 times strong enough to render a man unconscious in 10 minutes. It is this problem that confronts the designing engineers when they began to make plans for vehicular tunnels.

The engineer must make a count or estimation of the traffic that will use the tunnel, making allowance for future increase. He must then calculate the volume of carbon monoxide that will be liberated into the tunnel by that number of automobiles. The speed through the tunnel and how long a person driving through would be exposed. From this he sets a limit for the concentration that will be allowed and then designs the tunnel ventilation system to deliver sufficient air into the tunnel to dilute the concentration to the allowable limit.

The next problem that confronts the engineer is the manner in which he will introduce this air, so as to accomplish this dilution in the most efficient and economical manner. In the New York-New Jersey vehicular tunnels that are now under construction this air is carried in ducts underneath the roadway and comes out through openings along the sides passing laterally up across the tunnel and out, opening into an exit duct above the roof of the roadway.

With the Liberty Tunnels at Pittsburgh, the ventilating system is of longitudinal type. The air for the first half of each tube enters with the cars, travels to the midpoint and is there exhausted up a stack. For the remaining half of the distance the air is forced down a shaft and out into the tunnel through a skirt-like nozzle pointed in the direction the cars are moving, and leaves with the cars at the exit. Although this is the system designed for the Liberty tubes and the construction is nearing completion, the present operation of the tubes is without mechanical means.

The present system is entirely dependent on natural air motion, together with the more positive and influencing factor of the air velocity set up by the car motion. Every automobile that goes through creates a pressure on the air, some slips by as is noted to the car occupants, but the net result is (unless there is a greater opposing natural velocity) to cause the air to move forward in the direction of the car. Under favorable conditions, every car through at 20 miles per hour will drag in enough air to dilute its exhaust gases to a value below 0.04, or within the allowable concentration for a one-hour exposure.

However, conditions are not always favorable for ventilation of this type, for the opposing natural velocity may equal that set up by the cars (this having occurred a few times for short periods) or the traffic may become blocked, thus losing the source of the air motion and since the cars will contiune to give off exhaust gases, a dangerous condition will result.

This latter is exactly the case on May 12. Due to the street car strike, the traffic on the Brownsville road exceeded the capacity of the Smithfield street bridge, and it became blocked curb to curb past the tunnel exit, virtually closing the exit of the incoming tubes and leaving it full of automobiles unable to move. The air motion soon decreased to an insufficient amount and the tunnel filled with gas. The ultimate condition was not as serious as it might have been had not men been present to aid in clearing the congestion and helping people out. A few among those helping to clear the tunnel had some gas, but soon recovered after treatment. A lot of people were slightly gassed but in the main, most were more scared than hurt.

An accident of this kind certainly bears out the necessity of an adequate ventilation system.

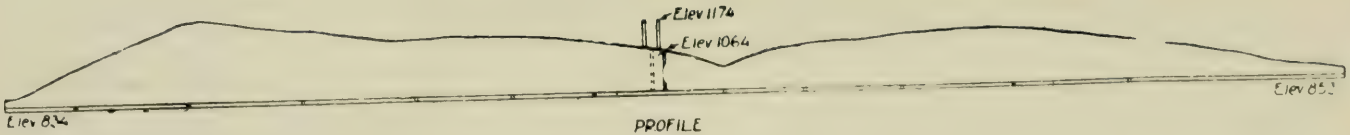
In your own private garage, you have this same hazard of gas poisoning, only in a more acute and dangerous degree. If you run your engine in a private garage of ordinary dimensions there will be enough carbon monoxide in the air in ten minutes to render an occupant unconscious. That means that if you have the door closed and start your engine, the chances that you will be unconscious at the end of ten minutes and dead at the end of twenty minutes are exceedingly good. Although you may not be entirely unconscious at the end of ten minutes you may be in a condition that will render you unable to stop the engine and get out. Should you be working around the exhaust pipe where the gas is more concentrated, the above condition will result in less time. From a consideration of the short time required to produce an extremely dangerous atmosphere and the insidious action of the gas, there is no allowable time for running an engine in a closed private garage.

VICE PRESIDENT: This has been a most interesting talk. The subject is timely and it has been treated in a very instructive way. The paper is now open for general discussion.

MR. C. O. DAMBACH: I would like to ask a little further in regard to the system in the Liberty Tunnel.

MR. WM. P. YANT: I am not much of an engineer, but will do the best I can. The Liberty tubes are two twin parallel tubes, one and one-tenth miles long. The designed ventilation system is to have a fan house on the hill above the tubes (see sketch) and draw the air in the entrance longitudinally through one-half of the tunnel and then up and out the stacks. Air for the remaining half will be forced down a shaft and into the tunnel through a skirt-like opening and out the exit.

MR. C. O. DAMBACH: If you have to use one tube for traffic one way, how would you take care of that?



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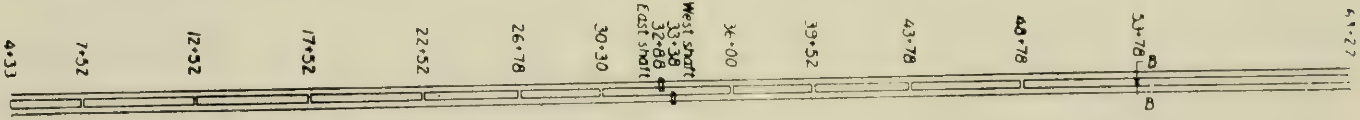

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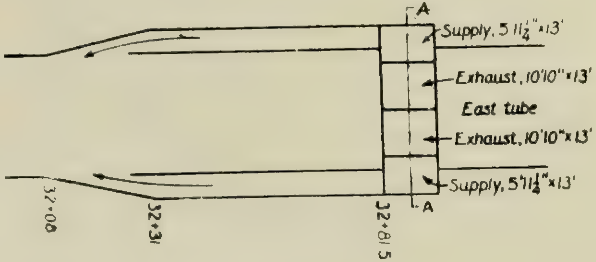

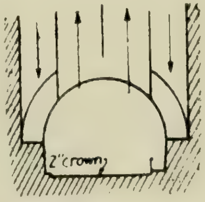

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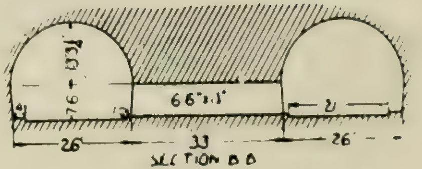

SECTION B B

MR. WM. P. YANT: I have not done any work on this system of ventilation and cannot make full comment. Further, there are no tunnels in existence that are directly comparable.

MR. W. S. BARTHOLOMEW: With the movement of vehicles to caarry or assist the air movement, would it make any difference which way the draft would go?

MR. WM. P. YANT: They are considering on the movement of the air by vehicles in the adoption of the longitudinal system, but also have considered a big safety factor in their fan capacity to take care of emergencies. The air motion set up by the machines is no negligible factor, as a 300-lineal-foot-per-minute natural wind velocity in the tunnels, with no traffic, can be entirely reversed by a few machines going in the opposite direction.

MR. C. O. DAMBACH: I know of a railroad tunnel 4,716 feet long with an air shaft in the center. The shaft was taken out and it is working better than it did with the shaft in. With two shafts it would be better, of course.

MR. WM. P. YANT: In the design of ventilation for the vehicular tunnels with their dimensions and magnitude of traffic, there were no precedents and the system had to be worked out by experimentation together with allied engineering principles. I believe they have done a good job with the Liberty tubes and the citizens of Allegheny county have something to be proud of, as it is the first tunnel of its size for automobiles in the country.

MR. W. S. BARTHOLOMEW: If a person were overcome by the combustion gases in a private garage in the ten-minute period and were recovered in time to save his life, would there be any permanent injury?

MR. WM. P. YANT: No, I don't think ten minutes is long enough to cause serious breakdown of tissues. It would take thirty, forty minutes or an hour to do that.

When an accident occurs there is seldom any chance to get samples of gas or scientific information, since everyone is busy helping out and forget these other matters, there being no time for it. However, we know in working with a dog we can render them unconscious in say 20 to 30 minutes and bring them back in good condition in 25 minutes with inhalations of oxygen.

MR. SAMUEL LYNN: As a resident of the South Hills district, and one of the fellows in the tunnel that Saturday morning about forty or forty-five minutes. I did not feel any effect of the CO, but to tell the truth, I was rather anxious to get out of that tunnel and finally, when a policeman came to me and instructed me to turn around and get out of the other end, I did not waste any time. There were hundreds of people in that tunnel that morning, the cars were packed three abreast, some owners deserting their cars, and when I got out I heard that a number of people had been overcome with CO. The only trouble I had was a headache, after I got out of the tunnel, which I thought was due to the excitement. What I would like to know is this—does the carbon-monoxide affect different people differently, or will the same percentage of gas get any of us in the same length of time?

MR. WM. P. YANT: There is quite a difference in men and also in what they are doing. If you hurry, you breathe more than the fellow who walks slowly. For example, a man breathes a certain amount of air when sitting still, twice that amount if he does mild work and three to five times that amount if he does vigorous work.

Also, there are differences to be found in men. In some of our work we have had men simultaneously exposed to the same gas mixture for like periods and some would fall unconscious where others would walk around. This might, in some cases, be due to differences in hemoglobin content of the blood of different individuals. The anaemic person or the one having less hemoglobin in all probability would be effected sooner because he was already deficient in hemoglobin and would be more susceptible.

MR. W. S. BARTHOLOMEW: Isn't it also possible that the analysis of the air in different portions of the tunnel would vary?

MR. WM. P. YANT: When the machines stopped the drivers allowed their engines to run. Men went through and asked them to shut them down, but they did not appreciate the danger or heed the warning and soon a concentrated gas-air mixture built up around them.

MR. W. S. BARTHOLOMEW: Were any samples taken?

MR. WM. P. YANT: Yes. Of course you have the same condition there. You cannot tell whether or not it represented the average condition of the tunnel. But there was sufficient there to make it dangerous in time.

MR. SAMUEL LYNN: I notice going through the tubes every here and there is a small opening or door for some purpose. Were they put in with the thought of protecting the tubes in case the ventilating system should fail, to open them up to get air through?

MR. WM. P. YANT: No, those break throughs are just for passageways. I believe they are for the convenience of tunnel custodians and also in case of need for any one to go from one tunnel to the other without having to walk the entire length of the tubes. There are 11 of these and if the people had stopped their engines and gone through to the other tunnel they would have been all right.

MR. W. S. BARTHOLOMEW: Is there any difference in the weight of air and CO? I understood those who were overcome were the people who got out of the machines and attempted to walk through. Was that because the gas was concentrated in the lower levels?

MR. WM. P. YANT: I would rather think that was due to exercise and excitement resulting in excessive breathing. There is little difference in the weight of carbon monoxide and air, although due to being warmer the exhaust gases would go up.

MR. A. E. ANDERSON: As I understand the theory of the speaker, the real effect of the CO is to displace oxygen in the red corpuscles of the blood, which are the little wagons, as he describes it. In the old days in temperance arguments there was a theory as to why whiskey makes a man drunk, that it was because alcohol has a strong affinity for oxygen and when you took alcohol into the circulation it commenced to take the oxygen from the red corpuscles, which deprived them of their oxygen carrying capacity, just exactly as the speaker has described. I would like to know how near that comparison is.

The in the pictures it showed that there is residuum of coke in oil distillation which we can call oil coke. What is the comparison between the content of the oil coke and coal coke and has it any bearing on the theory of oil being of vegetable origin, because its products will coke rather than an animal origin which is credited sometimes with the origin of oil.

MR. WM. P. YANT: Oil coke has considerable hydrocarbon from the oil in it and is not so nearly pure carbon as coal coke.

As to your theory of alcohol, I cannot say much because I have not investigated it as thoroughly as I have carbon monoxide —that is from the scientific standpoint. But it is true that the effects and symptoms are somewhat the same only with alcohol you do not get your headache so soon. The other symptoms, dizziness, weakness and nausea, are somewhat the same with each. I can hardly agree that combination with the hemo-globin takes place. At least I do not know of any such combinations.

As a matter of explanation, carbon monoxide is not a true poison from the street toxicalogical standpoint. It is an asphyxiant and simply shuts out the oxygen from the tissues.

MR. W. S. BARTHOLOMEW: It has no tendence to cause anameia of the blood?

MR. WM. P. YANT: If a person is exposed continuously day after day the body will try to compensate for the effect of the poison by an increase in hemoglobin but in time there may be a break in the compensation and a weakened, run down condition will result.

MR. A. E. ANDERSON: If the tunnels operate to capacity during rush hours and a break occurs, how do they care for it?

MR. WM. P. YANT: The tunnels have large safety factors and the fans can be speeded up to meet an emergency, thus forcing air through whether cars are in motion or not.

MR. A. E. ANDERSON: I mean if the fans cease operating.

MR. WM. P. YANT: A bad condition will be possible only in the one instance that the fans break down at the same time traffic is blocked, this being a very remote possibility.

MR. D. J. REDDING: In the event of the tunnel breaking down and the cars becoming blocked, what is the safest place, on top of the machine or down at the bottom?

MR. WM. P. YANT: On top of the car. The greatest concentration will be near the floor. The best thing to do is shut down your motor and go through into the other tunnel.

MR. C. O. DAMBACH: Those man ways will be open, will they?

MR. WM. P. YANT: They are now. I think they will be.

VICE-PRESIDENT: It is getting late and lunch is ready as usual. Is there anything further?

COL. J. MILLIKEN: We have heard a very interesting and exceedingly instructive talk by Mr. Yant and in order that he may know that we appreciate it, I would move that we give him a rising vote of thanks.

(The motion prevailed unanimously by all members rising.)

There being no further business, upon motion the meeting adjourned.

(Owing to the absence of the President upon this evening, the following paper was not orally presented.)

"A FEW CURRENT OBSERVATIONS ANENT TRANSPORTATION VIA RAIL".

By President, George D. Ogden.

Fellow Members of the Railway Club of Pittsburgh:

The railway situation at the present time presents many aspects of unusual interest. From the viewpoint of traffic movement a sharp change has taken place in recent months. During the late summer and fall of last year we were breaking one record after another for volume of transportation service rendered. For months at a time the average number of freight cars loaded weekly on American railroads exceeded 1,000,000. During the busiest portion of the year the average was around 1,100,000 a week and at times rose materially higher.

The average held well above the million car a week level over the close of the year and into the opening of 1924. More recently, however, there has been quite a little slowing up, and in the last few weeks the car loadings have been generally running under 900,000 cars a week, which is a very material decline from the peak traffic of last fall.

In the busiest months of 1923 it required the best efforts of all the railroad managements and their working forces, backed by the most splendid spirit of co-operation ever displayed on the part of the shipping public, to make the supply of freight cars go around. We succeeded in maintaining a slight margin over the daily requisitions, but heroic efforts were required to do it. As a matter of fact, the entire railroad plant of the United States during the last half of 1923 was used absolutely to maximum capacity, and, indeed, beyond what would have been considered maximum capacity, judging by standards of performance which would have been considered the best possible a few years since.

Today the change which has taken place in the situation may be judged from the fact that there are at present over 300,000 idle freight cars in the country stored in good order, for lack of work to do. Besides that, at least 5,000 locomotives have similarly been put away for the time being, as a result of the decline in traffic movement. Now these cars and locomotves together may be conservatively regarded as representing an investment of a full billion dollars. They, doubtless, cost the companies which own them considerably more than that sum, and certainly could not be replaced at the present time for the figure named.

They are at present earning nothing, but are eating up interest every day they are idle at the rate of at least $50,000,000 a year. We should have to much more than double that figure to get the total interest loss on all idle facilities, for it must be remembered that when freight cars are idle we also have idle capacity in tracks, yards, terminals, engine houses, shops and indeed practically every facility on the road. Moreover, passenger traffic is suffering a decline as well as freight.

Altogether, it is conservative to say that idle railroad facilities, as they exist at the present time, are running up an interest bill of probably from a third to a half million dollars a day—an overhead charge against which nothing is being earned.

I am citing these figures not because I think they are necessarily alarming, as they represent a condition which we all hope will be merely temporary, but because they call attention to some of the peculiar difficulties under which railroad management labors.

The country as a whole is going through a moderate recession in business. The cause, at least in the belief of many well informed persons, lies largely in the failure of Congress to interpret the nation-wide demand for a reduction in taxation, and a general all-around lowering of the costs of government, governmental activities and governmental projects.

All forms of business are feeling the decline of activity, common with the railroads. But the railroads are less able to cope with the situation than commercial, manufacturing, mining or other enterprises of a more individualistic nature.

When the business of a factory falls off, it is possible to operate on a five or four or three day a week schedule, or on part time for some or all days, or to close certain departments entirely, or even shut down the whole plant for a period, or resort to many other ways which are open, to control expenditures so that they may be kept in proper bounds with reference to earnings.

A railroad cannot do this. It must operate continuously whether business is heavy or light. If the patronage of a given train drops off, let us say from 300 to 150 passengers, which means a 50 per cent loss for that particular train, there is no means by which anything approaching a proportionate saving in the expense of operating that train can be effected. The train cannot be discontinued. If any reduction in the crew could be made, it would probably save the wages of only one man. Perhaps the wear and tear on a coach or two may be saved, by cutting down the length of the train. A trifling saving might be effected through the fact that a smaller amount of coal would be required to pull the lessened weight, but this would be more theoretical than real. Practically it would cost the railroad as much to pull a train of 150 passengers as it would one carrying 300 passengers. Generally similar conditions prevail in the freight service, although, of course, not always in exactly the same degree.

The net result is that it is more difficult in railroading than in any other business to meet a temporary decline in patronage with a proportionate cut in expenses. Almost invariably when railroad traffic declines, expenses are much slower in coming down, the operating ratio rises sharply and the net revenue moves towards the vanishing point.

The difficulties of management under these circumstances are necessarily increased by the fact that the government completely controls the prices charged for service—in other words, rates—and largely controls wages, the principal source of expense. We cannot effect a price adjustment very readily to compensate for the increased unit of cost of rendering service. Nor can we put into effect reduced wage scales to compensate for lessened demand for service.

Moreover, the tendency of regulation for many years has been to hold the net returns of railroads down to minimum figures even in good times. For instance, last year, with the highest traffic on record, the railroads were allowed to earn barely 5 per cent on the value of their property. Regarded as a whole, they carry over no surplus from the good year of 1923 into the period of lessened activity which has thus far characterized 1924. They have been permitted to save no margin from a year of magnificent general prosperity to tide them over lean times and even matters up.

The lesson from this, of course, is that railroads should be permitted to earn much larger returns in boom years, so that they could store up a surplus on which to draw when traffic declines and their equipment and other facilities stand partly idle. All other forms of business are allowed the opportunity to do so, but unfortunately our laws, up to the present time, make no provision for such a policy in the case of the railroads. On the contrary, as you are all aware, the recapture provisions of the present laws would take away all earnings over 6 per cent on the value of the physical properties in good years, without allowing any compensation when earnings fall far below 6 per cent in poorer years.

Another lesson is that with the handicaps under which railroad managements unavoidably labor, by reason of their difficulty in controlling expenses when confronted with periods of decline in business, it becomes doubly essential that government and governmental agencies should refrain from imposing upon the railroads needless forms of expenditure, and from interfering with the mature judgment of railroad managements as to the proper channels into which expenditures for betterments and improvements are to be directed. A most interesting object lesson is now in progress over the proposal to force upon the railroads the installation of automatic train control devices. In what I am about to say I do not wish to be understood as intending to impugn the motives or conscientious desires of the Interstate Commerce Commission to do what is right, but I merely wish to set before you the facts as they are seen by the railroad managements.

The commission has practically committed itself to the policy of requiring the railroads to install, within specified periods, electrical and other equipment applied to their tracks and engines, intended to obviate the possibility of collisions by bringing trains automatically to a stop when they approach each other within specified distances on the same track. This sounds like a splendid thing, and naturally has caught the imagination of the public. But, let us analyze the situation a little.

Where is the great loss of life on railroads today? Is it in train collisions? For answer to questions of this kind we must turn to the statistics which show what actually happens. The answer of statistics, as to train collisions, is emphatically, no! The great loss of life in connection with railroad operation occurs at grade crossings, and the fatalities and accidents of this kind are increasing at an appalling rate, whereas loss of life through collisions has been steadily diminishing for years, despite the increased volume of travel. The reason, of course, is the increased amount of double track, and the more and more extended use of automatic and other highly developed signal devices.

Here are some very important and significant figures. In 1914, 287 persons were killed on the railroads of the United States in train collisions. In the same year 1,147 persons were killed at grade crossings. That means that even 10 years ago, when the number of automobiles in use was only a small fraction of those in operation at the present time, four persons were killed at grade crossings for every one losing his life in a train collision.

In 1923 only 126 persons were killed in the entire United States in train collisions, but 2,268 persons were killed at railroad grade crossings. Although the volume of railroad travel had greatly increased in the decade, the number of deaths in train collisions was more than cut in half, but the number of deaths at grade crossings was doubled.

It will thus be seen that with the increased use of the automobile and the decreased risk in railroad travel, conditions have so changed that in 1923 for every one person killed in a train collision, 18 persons were killed in grade crossing accidents.

Now if we really want to spend money on railroad safety devices where the maximum saving of life will result, where shall we spend it? Shall it be in preventing train collisions or in preventing grade crossing accidents? There can be only one answer, and that is that expenditures for improved conditions at grade crossings will be 18 times as effective in the saving of life as the expenditures designed to prevent train collisions.

Does it not seem that it would be wise for the Interstate Commerce Commission to adopt this view also and accept the conclusions of practical railroad operating officers, backed up by the indisputable verdict of statistics, which is to the effect that the better protection at grade crossings is of vastly greater practical utility and effectiveness in saving human life than the adoption of train control devices to prevent collisions? And this verdict of practical experience holds even assuming that these train control devices really do all that is claimed for them—a conclusion which railroad managers are by no means ready to accept as yet.

On highly developed railroad systems, such as the Pennsylvania, it is by no means uncommon to go through an entire year without a single passenger being killed in a train accident of any kind, collision or otherwise. In 1921 two passengers were killed in train accidents on the Pennsylvania Railroad lines. In 1922 six were killed, five of them in one accident, on a portion of road recently taken over, which at that time had no block signal system. Last year not a single passenger was killed on the Pennsylvania Railroad in a train accident.

This makes a total of eight passengers lives lost in three years in train accidents of every kind on the Pennsylvania Railroad, and not all of these accidents were collisions. What was the record of fatalities in the same period at grade crossings? I regret to say that it reached the appalling total of 711 persons killed at highway crossings on the Pennsylvania System alone. Where would humanity and common sense dictate that we should spend such sums as we are able to spend to promote public safety? Should it be on train control systems, the effectiveness of which yet remains to be demonstrated, or on the better protection of grade crossings, and the total elimination of the most dangerous of them? It seems to me the answer ought not to be hard to find.

I did not mean to make this talk a discussion of automobile accidents or the grade crossing situation, but have merely cited these facts and figures to illustrate how at the present time a powerful governmental agency doubtless with the best of intentions, is endeavoring to force the railroads into vast expenditures of new capital in directions which railroad management not merely believes but knows will be very far from producing the best results which can be obtained with such great sums.

The answer is this, of course, that in attempting to dictate the exact methods of expenditures of this kind, our regulative bodies are going too far. They are going outside of the scope of regulation and into that of management, and they are undertaking to overrule the expert judgment and opinion of men who have spent their lives in practical operation of railroads, and the study, at first hand, of railroad problems and difficulties. The cure for this condition is for regulation to withdraw into its proper field and refrain from dictation in the field of administration, which is the function of management and not of regulation.

In addition there must be a greater spirit of fairness on the part of government and governmetal bodies in imposing expenditures upon the railroads. As I have been speaking of grade crossings, perhaps I may use them for a further illustration of what I have in mind. You will recall that at our last meeting (see proceedings of April meeting) I made a brief reference to the subject of railroad taxation, showing how it has been mounting for a number of years at a tremendously rapid rate, reaching the point where today taxes much exceed the dividends which the railroads are able to pay and constitute a serious burden upon the entire transportation industry. This, of course, was in reference only to the direct taxation of the railroads. Like all other forms of enterprise, the railroads pay taxes indirectly in countless ways. If we could get at all of these, the totality of the tax burden upon transportation would doubtless be staggering.

Some of the secondary or indirect effects of taxation upon the railroads are extremely interesting, although they are probably very little understood by the majority of people, and only in rare cases are we able to see distinctly just what has happened. The grade crossing removal situation, however, gives us some interesting light upon the subject. Let us consider just what is taking place in this respect.

To begin with, the railroads are subject to direct taxation to construct and build the public highways. These highways then take traffic from the railroads. Next, the highways themselves become crowded, and the railroads are subject to what practically amounts to a secondary form of tax to make the highways safe, by being called upon to pay all, or by far the greater part, of the enormous expense of grade crossing elimination.

In some states practically the entire burden of grade crossing removal is laid by law upon the railroads, and this not only places an unfair and unjust burden upon the transportation companies, but earns the fruits of injustice by seriously impeding the work of grade crossing elimination, which could proceed at a much more rapid rate if a fair and reasonable division of the cost were everywhere encouraged between the railroad companies and the communities and territories to be benefited.

Returning to our original subject—the decided slackening in traffic which the railroads are experiencing—the question naturally presents itself whether this condition is likely to be of prolonged duration. The experience of the past, even if we had no other guide, would make that seem improbable. History shows that railroad traffic tends to double pretty regularly over intervals ranging between 10 and 15 years each. The evenness of the upward trend is quite marked. Even after very severe business depressions, such as have followed the great panics of the past, the flow of railroad traffic has more than regained its former volume in a period which has always proved surprising, for its comparative brevity, to our economists and students of business developments.

At present we are not having anything like a panic, but merely a moderate let-down in business. There seems excellent reason for supposing that the injurious effect of the present unsound political movements have reached, or are very close to, their height. Every test of public sentiment in recent months has shown that the vast mass of the people of the country are solidly behind President Coolidge, Secretary Mellon and all the other sound and sane thinking men of both parties, who realize that the staggering expenses of government must be reduced, that taxes must be lessened and that the burden of living costs must be brought down. As the Presidential campaign progresses this will doubtless come more unmistakably into view and the result can hardly fail to be a marked revival of business activity and prosperity.

In my work on the railroad I am giving some time to service in connection with one of the regional advisory boards, which have been set up between the railroad companies and shippers in various territories to bring about a better co-ordination in the use of our transportation facilities. I am not revealing any secrets when I say that in these conferences recently there has been a marked note of optimism, and we who represent the railroads, in sounding out our fellow members who represent the industries, have been surprised at the unanimity of feeling which prevails to the effect that this coming fall will witness again a marked revival of commercial activity and a very heavy volume of railroad traffic.

While we may not surpass the records of 1923, and perhaps not fully equal them, it seems entirely probable that before the present year is over we shall again be in, or very close to, a maximum traffic movement. We cannot expect to go on handling great traffic, and moving far more freight and passengers than would have been thought at all possible a few years ago, without materially enlarging our facilities. That is really the problem for all of us today who are in the railroads or concerned with transportation matters. Our railroads must keep on growing. They cannot stop, because if they do the growth of business will sooner or later come to a stop also. As I tried to point out at the last meeting, a billion dollars a year is a conservative estimate of what we should spend upon new railroad facilities if the best interests of the country are to be promoted and the expansion of trade and production properly accommodated.

Nor can we afford to permit any let-down in that fine spirit of co-operation which prevailed last year between the shippers and the railroads, and which proved such a wonderful backing in assisting us to handle record breaking traffic. If the expectations of great business activity for the forthcoming fall and winter are realized, it is just as essential now as it was a year ago that we organize "ship early" campaigns and endeavor to clear the way for the crops and other seasonal freight, by moving everything between now and the end of the summer that doesn't have to be deferred to a later date.

With the same spirit on both sides that prevailed a year ago we should duplicate the successes of 1923 and add another fine chapter to the splendid record of American railroad transportation achievements.

J. D. CONWAY, Secretary.

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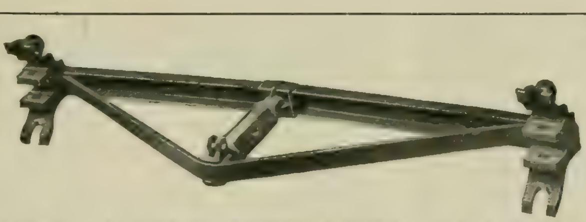

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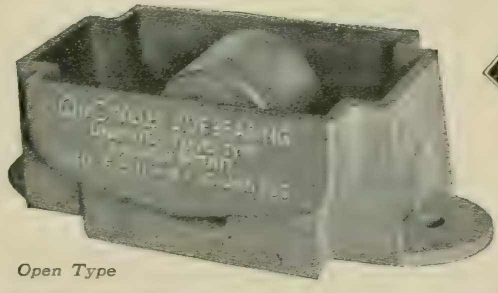

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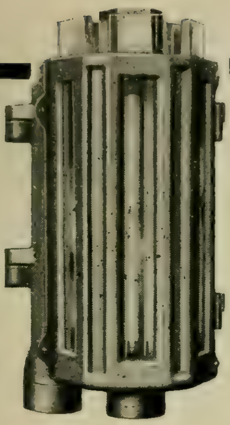

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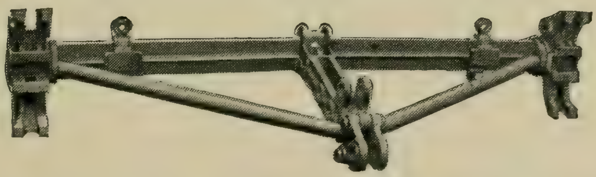

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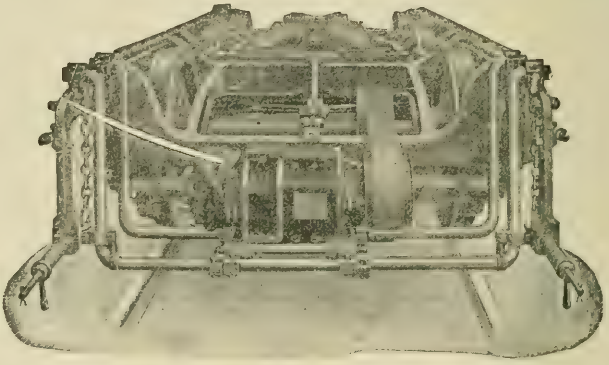

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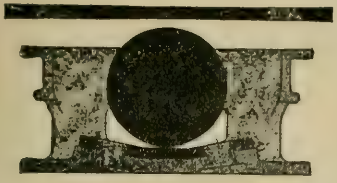

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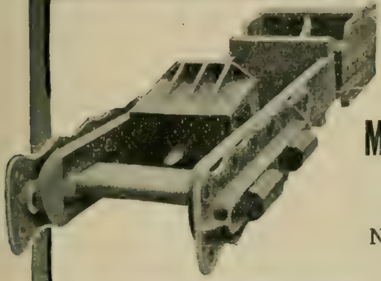

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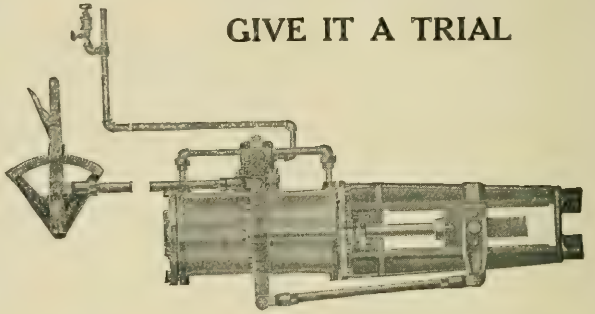

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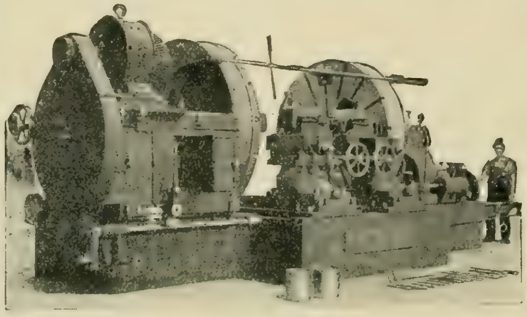

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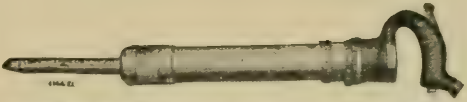

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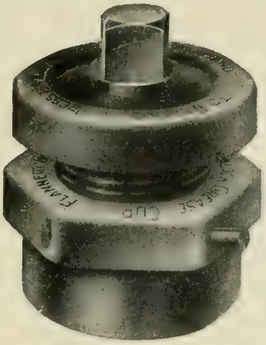

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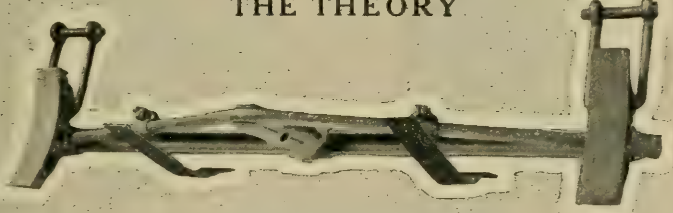

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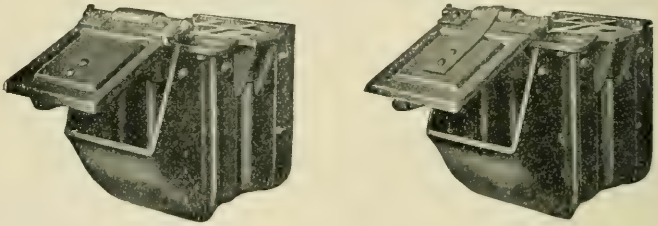

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OF

The Railway Club of Pittsburgh

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No. 8

Pittsburgh, Pa., Sept. 25, 1924

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F. H. STARK	November, 1905, to October, 1907
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D. J. REDDING	November, 1908, to October, 1910
F. R. McFEATTERS	November, 1910, to October, 1912
A. G. MITCHELL	November, 1912, to October, 1914
F. M. McNULTY	November, 1914, to October, 1916
J. G. CODE	November, 1916, to October, 1917
D. M. HOWE	November, 1917, to October, 1918
J. A. SPIELMANN	November, 1918, to October, 1919
H. H. MAXFIELD	November, 1919, to October, 1920
FRANK J. LANAHAN	November, 1920, to October, 1921
SAMUEL LYNN	November, 1921, to October, 1922
D. F. CRAWFORD	November, 1922, to October, 1923

*—Deceased.

PROCEEDINGS OF MEETING

SEPTEMBER 25, 1924.

The meeting was called to order at the Fort Pitt Hotel, Pittsburgh, Pa., at 8 o'clock P. M., President Geo. D. Ogden in the chair.

The following gentlemen registered:

MEMBERS

Abel, A. W.
Ainsworth, J. H.
Allderdice, Norman
Anger, C. E.
Ashcraft, E. J.
Babcock, F. H.
Balzer, C. E.
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Campbell, C. W.
Carson, John
Cherry, J. T.
Conway, J. D.
Croke, Thos. F.
Cronin, M. F.
Crowley, A. J.
Cunningham, R. I.
Dambach, C. O.
Davis, Chas. S.
Donovan, J. J.
Dunbar, H. F.
Edmunds, C. H.
Ellis, A. R.
Emery, E.
Endsley, Louis E.
Fendner, W. J.
Fike, James W.
Fowler, W. E., Jr.
Freshwater, F. H.
Furch, George J.
Geisler, Jos. J.
Gilg, Henry F.
Glenn, J. H.
Goda, P. H.
Greene, W. F.
Grieve, Robert E.
Guay, John W.
Guignon, W. E.
Gwinn, L. J.
Hale, Chas. E.
Hansen, Wm. C.
Hayes, Geo. W.
Haynes, J. E.
Holmes, E. H.
Hoover, J. W.
Hoover, R. C.
Howe, D. M.
Huber, H. G.
Hulick, E. G.
Hussong, Albert, Jr.
Jordan, J. M.
Jungbluth, Adolph
Kegel, A. E.
Kelly, H. B.
Kelly, L. J.
Kerby, F.
Kessler, H.
Ketchpel, Paul A.
King, J. W., Jr.
Kummer, Jos. H.
Laird, G. R.
Lanahan, Frank J.
Lanahan, J. S.
Laughlin, R. J.
Laughner, C. L.
Laurent, Jos. A.
Lawson, A. F.
Lee, L. A.
Lehr, Harry W.
Lewis, Herbert
Lobez, P. L.
Lohr, Allen W.
Long, R. M.
Luddy, W. E.
Ludgate, B. A.

Ludwig, C. F.
Lynch, Chas. A.
Lynde, L. E.
Lynn, Samuel
MacKenzie, J. B.
Maliphant, C. W.
Manning, R. E.
Matchett, H. K.
Miller, John
Milliken, J.
Mitchell, F. K.
Moir, W. B.
Moyer, Oscar G. A.
McCornish, W. J.
McConnell, John J. P.
McConnell, P. L.
McGeorge, D. W.
McGregor, D. C.
McLaughlin, H. B.
McNeill, J. Edward
O'Connor, M. J.
Ogden, G. D.
Orchard, Chas.
Osbourne, Alfred S.
Painter, Joseph
Parke, F. H.
Perkins, H. E.
Posteraro, S. F.
Prouty, E.
Rauschart, E. A.
Redding, D. J.

Redding, J. H.
Redding, R. D.
Reed, Frederick W.
Reeve, Geo.
Reynolds, D. E.
Robinson, R. L.
Sattley, E. C.
Sawyer, R. W.
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Shannon, David E.
Shellenbarger, H. M.
Sheridan, T. F.
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Snyder, J. W.
Stewart, L. S.
Stucki, A.
Sutherland, L.
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Van Vranken, S. E.
Walther, G. C.
Weissert, W. J.
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Wright, John B.

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Cruikshank, J. C.
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Plank, L. G.
Tea, C. A.
Timme, A. E.

Ward, W. J.

The call of the roll was dispensed with, the record of attendance being obtained through the registration cards.

The reading of the minutes of the last meeting was dispensed with as they are to appear in printed form.

The Secretary read the following list of applications for membership:

Bednar, Joseph J., Machinist, P. & L. E. R. R., 116 Churchill St., McKees Rocks, Pa. Recommended by C. E. Balzer.

Beltz, L. F., Gen. Fore. Bridges and Bldgs, P. & W. Va. Ry., 421 Ridge Ave., Carnegie, Pa. Recommended by R. L. Barrett.

Crowley, A. J, Salesman, Bradford, Corp'n., 25 West Forty-third St., New York City. Recommended by Samuel Lynn.

Cruikshank, J. C., Div. Engr., P. & W. Va. Ry., 441 Wabash Bldg., Pittsburgh, Pa. Recommended by R. L. Barrett.

Gigandet, H. V., Dist. Mgr., Oxweld Railroad Service Co., 30 East Forty-second St., New York City. Recommended by W. J. Murphy.

Hawkins, C. M., W. M. Ritter Lumber Co., 609 C. of C. Bldg., Pittsburgh, Pa. Recommended by D. M. Howe.

Higginbottom, W. C., Supt., Penna. R. R. System, 1013 Penn Ave., Pittsburgh, Pa. Recommended by Geo. D. Ogden.

Hoyles, N. C., Sales Mgr., Pittsburgh Testing Laboratory, P. O. Box 1115, Pittsburgh, Pa. Recommended by J. Milliken.

Johnson, Nelson E., Machinist, P. & L. E. R. R., 68 Dunn St., McKees Rocks, Pa. Recommended by C. E. Balzer.

Kennedy, M. C., Draftsman, Penna. R. R. System, 1135 Penna. Station, Pittsburgh, Pa. Recommended by D. M. Howe.

Laughlin, Harry, Foreman, Penn. R. R. Co., 117 First St., Aspinwall, Pa. Recommended by R. V. Headington.

Miller, Ara J., Dist. Sales Agt., International Tag Co., 609 C. of C. Bldg., Pittsburgh, Pa. Recommended by D. M. Howe.

Morgan, A. L., Supt. Penna. R. R. System, 24 Maple Ave., Wheeling, W. Va. Recommended by D. M. Howe.

Muir, Robt. Y., Car Fore., P. & W. Va. Ry., 212 Mansfield Ave., Greentree, Pa. Recommended by R. L. Barrett.

McGirk, John D., Engineer, Pittsburgh Testing Laboratory, P. O. Box 1115, Pittsburgh, Pa. Recommended by J. Milliken.

Root, Jos. P., Signal Fore., P. & W. Va. Ry., 764 Loretta St., Pittsburgh, Pa. Recommended by R. L. Barrett.

Stark, James L., Gen. Sales Mgr., Chicago-Cleveland Car Roofing Co., 3710 Grand Central Terminal, New York City. Recommended by J. D. Conway.

VanBlarcom, Warren C., Asst. Supt., Aliquippa & Southern R. R., Woodlawn, Pa. Recommended by C. D. O'Connor.

Weston, A. P., Dist. Salesman, Pittsburgh Testing Laboratory, P. O. Box 1115, Pittsburgh, Pa. Recommended by J. Milliken.

Wilkinson, F. C., Special Rep., Penna. R. R. System, 326 E. Bean St., Washington, Pa. Recommended by D. M. Howe.

PRESIDENT: As soon as these applications have been approved by the Executive Committee, the gentlemen will become members upon payment of the year's dues.

At this meeting it is necessary to appoint a Nominating Committee to place in nomination a list of officers for the year 1924-1925. I therefore appoint as such committee Messrs. D. M. Howe, Joseph J. Geisler and ————. The Committee will please be prepared to make their report after the reading of the paper of the evening.

In vacation time, especially, it is very difficult for our Program Committee to find eminent speakers for our meetings without interfering with their vacation plans. While it is not necessary to make any apology at all, I think it is only fair to our speaker of this evening to say that due to absence from the city our Committee was only able to inform him of his selection for this evening a few days ago. The time has been very brief, therefore, for him to prepare an address. I make this remark more in justice to him than through any feeling that it is necessary, for I am certain that we will very greatly enjoy his talk. It affords me great pleasure to present to you Prof. Louis E. Endsley, Consulting Engineer, Pittsburgh, Pa., who will address you upon the subject, "Some Interesting Problems in Train Operation."

"SOME INTERESTING PROBLEMS IN TRAIN OPERATION"

By Prof. Louis E. Endsley, Consulting Engineer.

Mr. President and Gentlemen of the Railway Club of Pittsburgh: I am glad to be with you. And I hope you enjoy a little of what I may have to say. The subject is a broad one, train operation, yet it may be divided into three very simple parts, starting a train, running it and stopping it. That is all there is to it. The more important and difficult, without damage, is the stopping of it. Like the man who jumped from the tenth story of a building, he had no interference when he started, nothing to hurt him while he was falling, but it was the stopping that caused the trouble.

We will start with a little information of interest with regard to the practical operation of trains in the United States today. In the New York Subway they operate more trains over a track in an hour than any other place in the world. They can operate 33 ten-car trains over a single piece of track per hour. That means 330 cars per hour. The old Subway was built in New York, consisting of four tracks, two high speed express and two low speed local. It was estimated that they would haul over those tracks 500,000 passengers per day. Before the Subway was finished 600,000 wanted to ride on it, and all wanted to ride on it at once, evening and morning. That is a real problem, when six people want to get into where five people can go. If you have been in the New York Subway you know that some times there is not room for the proverbial one more. These trains first stopped in a distance of 1320 feet and it took them 39 to 40 seconds to make a stop. That meant that trains would have to be at least that distance apart, and something more, to see a signal. The blocks were actually 1600 feet apart. That meant that only so many trains could pass in a given time, actually only half as many as are passing today. Today, by a better means of stopping these trains, they are able to put two trains over where only one train had been put over before, make two blades of grass grow where only one grew before. They did that by a method of applying the air brakes by electric equipment and stopping in 13 seconds instead of 39. Not in one-third the distance, because that does not work out in direct ratio. It is worth while to state that a Pittsburgh man, Walter Turner (working for a well-known firm in this district, the Westinghouse Air Brake Company), was able to make this improvement for the New York Subway. When the new braking system was applied they were able to shorten the distance between blocks.

This method of stopping trains was put into effect and they found that they could increase its efficiency still more by having a light and load brake, by which if five people weighing 200 pounds each get on a car while the doors are open it will set the brakes heavier for the next stop. It does not make any difference to the engineers whether the train is light or heavy, he can stop the train in the same distance. If he did not have this light and load brake he would always have to set the brakes at a distance where he knew he could stop a heavily loaded train and feel his way in with the train.

This has solved some wonderful problems in the operation of that system. Twenty years ago, when the Subway was built, there were not so many people in New York. At first they operated five car units. With this new system of operation they found they could operate 10 car units, and they are now planning to operate 16 cars in a train, two units of eight each, in rush hours.

The new subway has motors under each end of each car, of 190 h. p. That means that with a 10 car train there are 3,800 h. p. Those motors are made this large, due to the fact that they want to get away from stations just as quickly as they can. The new Subway picks up at a speed of two-thirds as fast as they stop. That is an increase in speed in miles per hour of 2.1 per second, or in 10 seconds after a motorman starts his train he is going 21 miles an hour. The draw bar pull necessary to get that train to pick up that fast when loaded is 115,000 pounds. That would be equal to three ordinary Pacific type locomotives. Another thing of interest is that those motors are not operated by a controller with notches to pick up speed such as the average street car. That is all done automatically. As a matter of safety the motorman is not allowed to start his train until every door is closed. There are 14 closing points on each car, counting both sides of the car. That means that on a 10-car train there are 70 connections, if all the doors are open, that must be closed before he can start his train. What he really does is to throw his lever into the starting position as soon as the train is stopped and the doors open. He has three positions in which he can place his lever. One picks up at a slow speed, one at a medium speed and one gives all the torque they can get between the wheel and the rail, short of the slipping point. If he comes into a station and knows there is a train ahead of him he will not leave at maximum speed. He does not want to throw on his brakes or have them automatically applied for him. But if he comes in and knows there is a clear track ahead he throws his lever to the maximum position and the moment the last door closes it starts the train automatically.

Some other safety devices may be of interest. The subject of train control in the New York Subway. There they have an ideal condition. No rain, no snow, no water on the track to amount to anything. The signals are all arranged with double blocks, that is they lap half way. The blocks are 1600 feet, but the middle of each block is the end of two other blocks, so the engineer will always know two blocks back where the train in front of him is. If he passes a red block his train is automatically stopped in 520 feet without any control whatever by him. A ramp comes up along the side of the track and applies the air. He cannot start the train again until some one on his train gets out and holds a switch that must be held until his train has passed this ramp.

Some record as to the work of the air brake in stopping trains may be of interest. The New York Subway trains have carried over 4,800,000,000 passengers without losing the life of a single passenger due to air brake failure.

Another thing of interest is the record of signal operation. A motor driver in the New York Subway today will only meet a false signal every 680,000 that he passes, and that will 19 times out of 20 be a danger signal when it is really clear, due to the fact that if anything happens to the mechanism the signal goes to danger. He will not pass a false signal that would mean any real danger to him more than once in 24,000,000 signals. That means that the perfection of the signal is wonderful. One of the things which we have not yet perfected is the absent mindedness of all of us. How many of you have looked at your watch to see what time it was and put it back in your pocket and did not know then what time the watch indicates. That is what an engineer does once in a while. So the New York Subway is running under a perfection of signals which probably will not be excelled, but can be equalled, on steam roads. The necessity for it is not here. When will the time come when space will be so valuable that a trans-continental line will have to put 30 trains an hour over a given track? Not in my lifetime, I hope. When that time comes there will be too much of a scramble to live in the United States.

The amount of energy in the average train today is inconceivable. The energy in a 10 Pullman car train and a Pacific type locomotive running 60 miles an hour is enough to throw a Ford automobile 20 miles in the air and take a couple of you along with it, if you wanted to go. If the entire energy of that train could be put under this building without loss we would all go up about four feet suddenly.

In the new Subway in New York they have been careful and painstaking to get seats for 76 people. They have seats in the end of the car and some running zig zag along the sides. They finally figured out a method of getting seats for 76 people. Only 224 more can stand up. Another thing which is of very great interest is the speed at which people get on and off the cars. At a stop on the Interborough some time ago in the car I was in 17 people got out, 36 people got in, and the train was standing still 11½ seconds by a stop watch in my hands. Assuming that two trains are coming into a station, one on an express track and one on a local. The local stops 11½ seconds and the one on the express track does not stop. If I should tell you that the through train going 40 miles an hour would only be four blocks of 500 feet each ahead of the local when the local was under full speed again, you would think that inconceivable. But that is what actually can be done. I have seen them stand only six seconds, but then not so many people get on and off the car. That is surely operating trains.

Some other safety features are interesting. If a person falls off the platform an attendant can push a button on the platform and stop all trains entering that track, and if the next train was over 520 feet away that man will not be hurt unless he falls across the third rail and then they do not need to stop the trains on his account.

Something more as to this light and load brake. These cars are checked very often to keep the brakes regulated in proportion to the weight in the car. That is a point to which I do want to direct your attention. Repairs in the average freight yard would be materially reduced if all our freight cars had a light and load brake on them. Now we have under a light car a 70 per cent braking power. That is the pressure on the brake car shoes has an amount of force equal to 70 per cent of the weight on the wheels of the light car. With a loaded car that may drop to 18 per cent. If there are loads and empties in the same train that do not receive the same per cent of brake power on them, you can appreciate that the light ones will stop very much quicker than the heavy ones, and that is one of the things that quite often pulls trains apart in operating them, especially in some sections of the country that are a little rolling, and it so happens that this country is not entirely level.

Just a word from my standpoint as to what slack in a train may really do. It would be of no benefit to have slack in a train if you only wanted to stop it or run it. You need no movement between cars after they are once started, except a swivel going around a curve. But if in starting that train it would require quite a locomotive to start the entire train all at once. Of course in the New York Subway they have plenty of tractive power under each car. They could rivet them together and start. But there each car also does its own work and has its own braking power. If locomotives were put in front of the train with the same tractive power you could do the same thing, but it would not be as pleasant for the passengers. In stopping a train you do not need any slack. All you locomotive engineers know that in stopping it is best to get your slack in before you bring the train to a full stop, otherwise the front end might stop first and the rear end will run in and cause a shock.

But I want to differentiate between slack between cars and draft gear troubles. I can conceive of a train that only had draft gear travel in it, with no slack, but I have seen very few. I had the pleasure at one time of riding 120 ton cars, brand new, no slack, and it was a wonderful kind of ride. But when we get a train of cars with two or three inches of slack on each car, there is sure to be some shock in a 100 car train. Gentlemen, I believe it would pay the railroads to spend a little money—and get it back—in repairing and keeping up the draft gears and attachments so there will be less damage to lading and cars. The saving will come at the other end. I am firmly of that belief. I have been a member of the Draft Gear Committee for nine years and have made some study of the draft gear situation and I believe that all railroads should buy a draft gear of sufficient capacity to take care of a reasonable speed of switching. My opinion is that while a great deal of damage is done out on the line, it is started in the first place by a hard bump in the yard that nobody checked up until the train got out of the yard and it pulled in two. All they say is that something failed when that damage may have been done, and I believe quite often was done, back in the yard in switching. And then after buying a good draft gear, do not expect it to last the life of the car. I know some draft gear people will tell you they will, but how many of you would buy a brake shoe that the fellow told you would last the life of the car? If they did, the very next time you started to stop the car you would not stop it. There would be no coefficient of friction between the brake and the wheel if it did not wear away some.

So in operating trains the big problem is to get out the energy which has been put in by the locomotive. And that energy is taken out in two ways, by the brake shoes and by the draft gear. And only in those ways, unless it hits something that is not supposed to be in the operation of that train.

I hope you have enjoyed my little talk. I have said more than I expected to, because I did not follow my notes. I thank you very much for your attention.

PRESIDENT: We have all enjoyed Professor Endsley's talk and if there are any present who would like to ask any questions I know he will be pleased to answer them.

QUESTION: How fast were those trains running when they started to make that 13-second stop?

ANSWER: Forty miles an hour is the maximum speed on the level. Once in a while down grade they do pick up a little more than that.

Q. Is that brake automatically applied or is it applied by the motorman in coming to a stop?

A. It is only automatically applied when the motorman passes a red block. At other times he has full control of his train.

Q. Has he a certain point at which to apply the brakes?

A. There is a light which tells the motorman how far he is from the station and after a stop or two he finds out just how the brake shoes are working. They are, of course, not absolutely accurate. Friction is one of the most uncertain things there is. You who drive automobiles know that. After the motorman has made a few stops he knows how far it takes to make a stop without an extra second stop. He does make two applications but if you will watch, the last air applied is less than a move of 20 feet.

Q. I understand they move a million people a day.

A. The old subway moved 1,300,000 before any of the new subway was built. They are carrying today 2,000,000 people every day.

Q. Does the engineer leave his air applied until he reaches a full stop or does he release a portion of the air when the train is just coming to a stop?

A. He can do either, increase or decrease.

Q. I would like to bring out this point for the benefit of those who may not understand. The brake is electrically operated?

A. Entirely. The air is operated by electricity.

Q. That means that when he goes to apply the brakes it is a simultaneous application and when he releases the brakes it is a simultaneous application?

Q. I just wonder if the Professor can tell us if anything has been accomplished toward utilizing the friction of the passengers that are standing up, who hate stoppages of the car?

A. The friction is usually between the fellow who has just got in and the fellow who is trying to. Sometimes he does not get in. So it is not dependable.

Q. I would like to ask whether with the drag on certain brake shoes greater than on other brake shoes, due to the difference in wear, there is any tendency to flat wheels at times?

A. They are very careful to keep their brake cylinders of very uniform travel. That is something that we steam railroaders do not always have. But they keep them of uniform travel and that is tested when they test the light and load feature of the brake. They use a uniform brake shoe but of course brake shoes very in coefficient of friction, but they do not vary enough to cause a wheel to slide. The brake shoe pressure only utilizes about 85 per cent of the force necessary to slide the wheel. They have not had many slid wheels in the New York Subway. Of course, if the wheel slipped the train would run on for a distance of something better than 520 feet, because the coefficient of friction between a sliding wheel and rail is less than that of a rolling wheel and rail.

Q. Do they ever find it necessary to use any sand to aid friction in making a stop?

A. They do not use sand in the New York Subways.

Q. When the engineer passes a danger signal and the brake is automatically applied, is it applied in its emergency or just its ordinary application?

A. It is thrown into the emergency application, which is a stop in 520 feet.

Q. I have understood that when the brake goes on in emergency it is likely to throw the passengers down.

A. In the New York Subway they get the emergency every day in the week, especially if they are a little behind time.

PRESIDENT: Is there any further question?

MR. D. J. REDDING: Mr. Chairman: I do not think of any questions I want to ask the professor at this time, but I do want to offer a vote of thanks to him for the talk he has given us. He has told a wonderful story about the tremendous amount of business being handled by these New York Subways, and the prominent part which a former member of this club, Mr. Walter Turner, now deceased, took in making it possible to handle the business by development of a better brake than that with which the cars were originally equipped.

The thought that such a great improvement can be made in the handling of traffic by a better brake operation is one which I dare say has not been appreciated by the majority of railroad men. The wonderful part of Professor Endsley's talk to me, however, is that he can come here without any particular preparation and tell us so much of the details of the operation of these subways, when, so far as I know, he never worked on the subways or had very much to do with their construction or operation, and it indicates the immense amount of information that the professor has stored up, and I know from talking to him on other matters that he is equally well informed on many other subjects entirely foreign to the operation of a subway. I feel that he must have a kaleidoscopic mind full of pictures covering various subjects, any one or dozen of which he can release and throw on the screen at a moment's notice, and I feel that we are very much indebted to the professor for this interesting talk.

(The Club showed its appreciation by a unanimous rising vote of thanks).

PRESIDENT: May we now hear the report of the Nominating Committee?

The Chairman of the Nominating Committee, Mr. D. M. Howe, read the report of that committee for officers for the ensuing year, as follows:

PRESIDENT

A. Stucki, Engineer, Pittsburgh, Pa.

FIRST VICE PRESIDENT

Frank G. Minnick, Assistant General Manager, Pittsburgh & Lake Erie R. R. Co., Pittsburgh, Pa.

SECOND VICE PRESIDENT

George W. Wildin, General Manager, Westinghouse Air Brake Co., Wilmerding, Pa.

SECRETARY

J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa.

TREASURER

F. H. Stark, 1700 Ridge Ave., Coraopolis, Pa.

EXECUTIVE COMMITTEE

L. H. Turner, Special Representative to Vice President, Pittsburgh & Lake Erie R. R. Co., Chairman.

D. J. Redding, Supt. M. P., Pittsburgh & Lake Erie R. R. Co.

F. R. McFeatters, General Superintendent, Union R. R. Co.

A. G. Mitchell, Woodbury, N. J.

F. M. McNulty, Rosslyn Farms, Carnegie, Pa.

J. G. Code, General Manager, Jefferson Southwestern R. R. Co.

D. M. Howe, Railway Supplies.

J. A. Spielmann, Asst. to General Superintendent, Baltimore & Ohio R. R. Co.

H. H. Maxfield, Supt. M. P., Pennsylvania R. R. System, Southern Division.

Frank J. Lanahan, President, Fort Pitt Malleable Iron Co.

Samuel Lynn, Master Car Builder, Pittsburgh & Lake Erie R. R. Co.

D. F. Crawford, Vice President, Locomotive Stoker Co.

Geo. D. Ogden, Traffic Manager, Pennsylvania R. R. System, Eastern Region.

FINANCE COMMITTEE

E. C. Sattley, Vice President, Champion Sales Co., Chairman.

C. O. Dambach, General Superintendent, Pittsburgh & West Virginia Ry Co.

E. A. Johnson, General Sales Manager, Duff Manufacturing Co.

E. J. Searles, Schaefer Equipment Co.

J. A. Beattie, General Superintendent, McKeesport Connecting R. R. Co.

RECEPTION COMMITTEE

F. H. Freshwater, Sales Agent, Pressed Steel Car Co., Chairman.

W. E. Fowler, Jr., Sales Representative, Davis Brake Beam Co.

J. L. Smith, Supt. M. P., Pittsburgh & West Virginia Ry. Co.

S. E. VanVranken, Purchasing Agent, Locomotive Stoker Co.

M. A. Smith, Asst. Supt. M. P., Pittsburgh & Lake Erie R. R. Co.

Col. H. C. Nutt, President and General Manager, Monongahela Railway Co.

MEMBERSHIP COMMITTEE

J. A. Ralston, Mechanical Engineer, Union R. R. Co., Chairman.

H. E. Chilcoat, Manager, Clark Car Co.

A. D. Chittenden, Supt. Transportation, Bessemer & Lake Erie R. R. Co.

J. L. Cunningham, Supt. M. P., Pennsylvania R. R. System.

E. J. Devans, General Superintendent, Buffalo, Rochester & Pittsburgh Ry. Co.

Harry B. Kelly, General Road Foreman of Engines, Pittsburgh & Lake Erie R. R. Co.

Col. James Milliken, President, Pittsburgh Testing Laboratory.

R. M. Long, Air Brake Inspector and Instructor, Pittsburgh & Lake Erie R. R. Co.

M. W. Clement, General Manager, Pennsylvania R. R. System, Pittsburgh, Pa.

ENTERTAINMENT COMMITTEE

E. Emery, Railway Supplies, Chairman.

Henry F. Gilg, Sales Manager, Penn Iron & Steel Co.

Jos. H. Kummer, Supt. Orders, Fort Pitt Malleable Iron Co.

SUBJECT COMMITTEE

Chas. Orchard, Traffic Department, Carnegie Steel Co.

John B. Wright, Asst. to Vice President, Westinghouse Air Brake Co.

J. S. Lanahan, Vice President, Fort Pitt Malleable Iron Co.

Upon motion, duly seconded, the report of the Nominating Committee was accepted and the Secretary instructed to forward the record of ballots to the members by mail, it being understood that any member of the Club is privileged to nominate any person for an office if he is not satisfied with the nominations of the committee.

SECRETARY CONWAY: It is early and before we adjourn I wonder if the members of the Club would not be glad to hear from our President as to his experiences in Europe this past summer? He has just returned and I have no doubt that he made some observations that would be of interest to railroad men as to railroad operations abroad.

PRESIDENT OGDEN: It is very kind of Mr. Conway to make this request, and frankly it is just a little disconcerting, as I scarcely know where to begin and where to end. First of all, this was my first trip to Europe, and was undertaken with my family merely for our own pleasure and education. I used their various service, sometimes third class, sometimes first class, on day trains, and had the experience of a trip by night from London to Edinburgh, a distance of approximately 400 miles. Their passenger service cannot fail to impress you favorably. Their passenger cars (called carriages) are lighter than ours and ride very smoothly.

The speed of long distance trains is quite remarkable, averaging on some runs nearly 60 miles per hour for a distance of say 200 miles. On these long distance trains they observe a practice that is considered very hazardous in this country—in fact is prohibited on some of our roads, which we would term a "flying switch," but designated as "slip runs" over there. Some of the long distance high speed passenger trains have as many as four of these "slip runs." There may be two or three cars in each slip, with a marker on the last car to indicate whether it is the first, second or third. There is a guard in charge of each slip who is furnished with a key which controls the mechanism, disconnecting the air, or vacuum, as they call it, running at a speed of upwards of 60 miles per hour, and allowing the slip to drift into the station and come to a stop. Passengers in the carriages need not necessarily have any knowledge of what is going on, as the engineer does not need to "give the slack" and the stop is made perfectly without any abruptness. I inquired of an inspector at Paddington Station, London, if they ever had any accidents under this practice, and was told there never had been one in his experience of many years. Their guards are men of long service, and besides there is also a very careful inspection made and a survey of weather conditions before the train leaves the terminal, and in the event of a very dense fog, the key is taken from the guard and slips not made on that date, but the train makes the authorized stops, carrying the cars through to the end of the run.

The engines are very graceful in design, and not nearly as large as ours. The layman is very much impressed with the attractive lines and the mechanism is apparently very much more delicate than on American roads, which is possible because of their lighter equipment; also because of the more level country, together with many other conditions, including absence of grade crossings, etc., etc. Under the system of operation outlined, a passenger run maintains a high rate of speed quite uniformly over a distance of more than 200 miles.

The railroads of England are, I think, very efficiently managed. Following the World War some 400 individual lines were divided into four groups and placed in charge of one operating organization for each group, taking over the existing organizations of the individual companies and utilizing those men in the larger amalgamation. The ranking officer is the General Manager. They also have a chairman of the Board of Directors, to whom the General Manager is accountable.

It was my pleasure to have luncheon with Sir Felix J. C. Pole, General Manager of the Great Western Railway, Paddington Station, London, who had risen to his high position from the ranks; in fact, it is quite common with European railroads to select their principal officers from men who have come up from the ranks. It may be from the train service, which was only recently made possible, but more generally it is from the office forces.

The tickets are not collected by the train conductor. In most instances their stations are so arranged that passengers must pass out a given gate, and the tickets are collected at destination. There is no possibility of escaping the ticket collector as you leave the railroad station, as there are sufficient inspectors to keep the crowd moving in one direction. The penalty in England for attempting to defraud the railways is very severe, and this may be a partial explanation for adoption of the plan to collect tickets at destination.

The baggage arrangement, as we would term it, but as they designate it, "luggage," is perhaps an improvement on our system. People who are accustomed to taking several trunks find it more or less difficult to pursue that custom when traveling in Europe. The most convenient way to travel over there is to have only the essential luggage in a couple of hand-bags, which can be taken into the compartment. If you have too much luggage, i. e., several suit cases, they can be deposited in a luggage van which is carried on the train for that purpose. The baggage is marked with a tag with a large letter representing your given name, and when the destination is reached, the luggage is assorted corresponding with the letter on the tags. Generally speaking, I think their baggage arrangement over there is more simple, and perhaps more satisfactory to the passenger than the use of trunk or trunks in this country, where you have to wait at destination for delivery. It is also very apparent that passengers in Europe, as a rule, travel with much less luggage than Americans in this country. Perhaps it is not too much to say that the railroads in this country find it a very great burden to meet the baggage requirements today satisfactorily. There is such an enormous quantity at peak periods that it is difficult to find places to handle it expeditiously, and particularly to accomplish delivery at destination with the exact ness required by the owner upon arrival in a large city.

They have a pension system that upon casual observations would differ somewhat from ours. One thing they give the man the option to play a little earlier than do the railroads in this country.

In connection with Prof. Endsley's very interesting and instructive talk tonight, I will tell you a little of my impressions in connection with the operations of the subways in London. This is the cheapest way to get around London, and I used the service very frequently. When you become acquainted with the subway system you can travel miles and miles, and distances are rather great at times, at very little cost and with great satisfaction, as efficiency in operation is apparent on every hand. They are single tube subways, and in talking with Prof. Endsley prior to the meeting this evening, I suggested that the subways in our country would be much more attractive if similarly constructed. With the single tube operation, the air is all moving in one direction and ventilation is very much better than what we have in this country with double track subways and the constant churning of the air by trains moving in opposite directions.

There are very few attendants—you have to be your own guide almost entirely, but in the cars they have a list of the stations that you can readily follow. You know where you wish to go, and when you enter the car, by glancing at the list of stations, there is no difficulty in following the stops until your destination is reached without the aid of any announcement. You surrender your ticket when you leave the subway, and the fare depends upon the distance.

I do not think of anything more that would be of especial interest, and as I stated at the beginning, I was not over there to railroad but to enjoy a well-earned vacation, and I had it. Thank you.

MR. D. J. REDDING: As I understand it, the railroads of England were taken under government control, and operated by the government.

PRESIDENT: Following the war there was legislation passed that required the amalgamation to take place by a certain date voluntarily, and if it was not accomplished by a certain date, it would be accomplished by process of law. The amalgamations were made voluntarily, and in most of the four systems that now exist, comprising the former 400 separate lines, the original conditions have not been very much disturbed, for the reason that they have retained the same operating officers, and the wise General Manager has pursued the line of least resistance, and not attempted to radically reorganize those official staffs.

MR D. J. REDDING: I understand many of the railroads of England were government controlled and they are not so now, that is, there have been companies formed to operate those railroads privately, they are not government operated railroads.

PRESIDENT: I think they are all privately owned and operated now.

MR. D. J. REDDING: In other words, they had government control and gave it up.

PRESIDENT: My impression is the English roads were all independently owned and are so today. Furthermore, as compared with the government operated roads in France, you would all vote in favor of the English roads. On the French railways there is not the same delicacy of touch, there isn't the same courtesy upon the part of the employes, but in fairness to all concerned, it is perhaps proper to explain that this may in part be due to Americans not speaking their language, yet at the same time if I were asked for an opinion based on observation as a tourist, I would say that the service on the government owned railroads of France is not nearly as attractive as the service on the independently owned and operated lines of Great Britain.

PRESIDENT: If there is nothing further to come before the meeting, Secretary Conway has provided the usual attractive luncheon, and we will now take a recess to partake of it.

There being no further business, upon motion the meeting adjourned.

(At this meeting President Ogden presented the following paper:)

Fellow Members of the Railway Club of Pittsburgh:

I am very happy to be present at one of our meetings again, particularly as my term as President is drawing to a close. Let me take this occasion to say that every one of our sessions that I have attended has proved an inspiration and help in my work and has many times over repaid the trouble and effort required in my journey here from Philadelphia.

The railroads of the United States are just now at the height of their traffic movement for the present year. It, therefore, seems worth while to take stock of the situation and see just where we stand. We Americans are so accustomed to continuous progress, and to the constant making of new records in the volume of production and commerce, that we are apt to become unduly apprehensive and alarmed, and sometimes even hysterical, at the recurring periods of slowing down and moderate recession in trade which invariably overtake us after any unusual burst of activity. We make all comparisons with the last boom instead of what may be considered the line of normal or average progress.

Now 1923 was one of our red letter years of prosperity and good times. We shattered all previous records of production and turn-over in almost every line of industry and commerce. We moved all our standards of living up many pegs and accustomed ourselves to look upon as the common necessities of life many things which a few years ago were everywhere regarded as luxuries. We spent more money per capita upon our individual needs and amusements and pleasures of all kinds than was ever spent before in the whole of history, by the people of any nation in the world. In short, we were going at a pace which all of our past experience could have told us must be followed by a breathing spell.

This year we have been having the breathing spell, and many good people have been bitterly disappointed because we have not been doing better than, or even quite as well as in 1923. They forget that we have been running far ahead of 1922 and 1921 and have been keeping even well in advance of the most active years of the war, when the tremendous production of munitions and supplies so greatly swelled the totals of industrial output.

If the present year were really a bad one in business, the fact would with absolute certainty be reflected in the figures of railroad traffic, which for three generations have been acknowledged as our most certain and infallible index of the relative activity of production and trade. When we examine the traffic figures for 1924, what do we find? We discover that up to the last week in August the total car loadings on American railroads had exceeded 30,500,000 cars, as compared with 32,000,000 in the corresponding period of the record-breaking year 1923, and 26,700,000 in 1922. So, for the first eight months of the present year we are less than 5 per cent behind the best year ever known and more than 14 per cent over the figures of two years ago. That is not such a discouraging showing, after all, when you come to think about it. Moreover, everyone seems to be agreed that business is distinctly improving and the remaining months of the present year are likely to make a still better comparison with 1923 and earlier years.

The number of surplus freight cars has been reduced to not much over 250,000, or about 9 per cent of the total number owned. That is, of course, still an unnecessarily liberal margin, but it must be recalled that even through the tremendous traffic boom which marked the closing month of 1923, we were able to maintain an average margin of over 50,000 cars above the requisitions of shippers, and were quite properly proud of the fact as being an outstanding demonstration of improved efficiency in management and in the utilization of our facilities.

We have again reached the point at which weekly car loadings have touched the million mark, or not greatly under the average for the closing quarter of 1923. Indeed, but for abnormal conditions in special industries, notably coal, which are due to special causes, it seems likely that the current volume of railroad traffic would now be running very nearly parallel with last year.

In this survey, what lesson does it seem reasonable to draw from the current situation? The facts are that railroad traffic in general is only moderately below the high records of last year, that it is moving toward parity with those records, and is substantially above that of any previous year. Yet in practically all lines of business the present volume of trade is not accepted as satisfactory and there is every expectation that when we have really "good times" again, the volume of commerce will be much above its current levels. What, under these circumstances, is a sensible outlook with regard to the future of railroad traffic.

To me there seems only one answer. It is that history is practically certain to repeat itself and that the next time the trend of business sets definitely upward, in one of its major constructive swings, all old records in the demands upon the railroads for transportation service, including those of 1923, will be shattered, and new ones set up in their places. Whether the moderate increase in business activity now being noted is the real beginning of such a swing, I, of course, have no means of knowing and would not even feel warranted in expressing an opinion. But that the swing will come, in the due and proper course of time, is about as certain as anything that can be in the future course of human affairs, that is, if we are justified in drawing any conclusions at all from the lessons of the past. Railroads and their patrons alike, if these views are reasonable, would do well to take advantage of the present breathing spell to prepare for the coming of the time when the demands for railroad service and accommodations will exceed the normal capacity of existing facilities.

It was in such spirit as this, I feel safe in saying, that the directors of my own company recently authorized the purchase of 10,000 new all steel box cars, the placing of the orders for which constituted one of the most notable events in the steel and equipment markets for some months past. The cars were not ordered primarily because any immediate serious shortage exists. They were ordered to forestall and anticipate future demand, and because equipment prices and money rates offered a more favorable opportunity for such purchases than has existed for a long period of time.

Policies of far-sighted common-sense optimism have always in the long run proved wise and profitable for well-located and efficiently managed railroad systems, which is, of course, perfectly natural in a country whose total railroad traffic doubles once in about every dozen years, and it is important that our railroad managements should be free to put such policies promptly into effect when favorable conditions present themselves. The present situation, in fact, merely serves to provide additional emphasis for the need of permanently, and definitely, constructive and helpful policies in railroad regulation and in the entire attitude of government toward transportation, in order that the railroads may at all times be in a financial position to anticipate and prepare for future needs and the growth of traffic.

Turning to an entirely different aspect of the situation, the present condition of the railroads is noteworthy for the remarkable extent and importance in the economies and increased efficiency of operation which have been effected in recent years. To gain a correct understanding of the developments, it is necessary to build up a little historical background.

You will all doubtless recall that a period somewhat before the outbreak of the World War, Hon. Louis D. Brandies, now a member of the Supreme Court, and then a practicing attorney, startled the country with the assertion that the railroads of the country were "wasting a million dollars a day." What he appeared to mean, upon careful examination of his remarks, was that under the conditions of operation as separate companies, there were certain duplications and other factors, incidental to railroad operation, by the elimination of which he figured upward of $300,000,000 a year might be saved. This viewpoint, of course, totally failed to take account of the offsetting advantages of competition in stimulating progress and improving standards of service. Aside from that, his conclusions were not everywhere, in the best informed circles, looked upon as capable of standing the test of statistical accuracy. Nevertheless, his utterances created a profound sensation and undoubtedly did the railroads a vast amount of totally unwarranted harm, particularly as many people were ready to accept the easily inferred conclusion that if the government ran the railroads as a non-competitive system, that sum of a million dollars a day might be saved.

The war, of course, supplied a test which was totally unexpected at the time Mr. Brandeis made his assertions. The government took the railroads at the close of December, 1917, and kept them until the close of February, 1920. There was no saving of a million dollars or any other sum per day during that period. On the contrary, expenses were increased $6,200,000 a day.

For the six months which followed the close of Government operation, during what is called the "guarantee period," the Government retained control of labor policies and conditions, and in the course of those six months added $2,681,000 more per day to expenses, making the total increase in expenses of operation, from the beginning of Government control to the close of the "guarantee period," $8,881,000 per day.

It would of course be grossly unfair to assert that that vast increase in operating expenses might have been totally avoided had the railroads remained under the management of their owners. Nevertheless, it is extremely interesting to see what has happened since the close of the guarantee period, on September 30, 1920, remembering that the intervening period has been one in which very few of the country's great industries have found it possible to effect any very striking economies, while many of them have found it impossible to introduce any economies at all.

A compilation very recently made of the per diem costs of railroad operation, now and four years ago, is very illuminating in this connection, and deserves more attention on the part both of railroad interests and the general public than it has received.

This compilation shows that between September, 1920, and June, 1924, the managements of the railroads, working under conditions of unusual difficulty, were enabled to reduce the daily costs of operating the Class 1 railroads of the United States by the great sum of $4,852,000 per day. This means that, in four years, private management has been able to wipe out all the increased costs incurred during the guarantee period and a full third of the entire increased costs incurred during the whole period of government operation.

That is really an achievement of the first magnitude and one of which every one who helps to produce railroad service, or is one of its users, should look upon as a cause of pride and congratulation. It means that a vast and healthy degree of deflation has been effected in the railroad industry since the immediate post war period, and that while the work is doubtless still not fully completed, railroading can show a degree of progress in the return toward a normal and permanently sound basis of operation, which is not surpassed by any of the country's other great branches of industry or commerce.

The truth that freight service on American railroads is relatively the cheapest and most efficiently produced thing in the world today, was strikingly brought out by some compilations recently prepared by Dr. David Friday, an eminent economist, formerly head of the Michigan Agricultural College and now head of the Transportation Institute at Washington. Dr. Friday showed, among other things, that at existing rates a railroad has to haul a ton of freight forty-eight miles to earn the price of a pint of ink, 115 miles to buy a monkey wrench, and 3,350 miles to pay the day's wages of a train crew.

While congratulating ourselves upon the degree to which the American railroads have regained their balance from the disturbed conditions immediately succeeding the war, we should never lose sight of the fact that they must always be regarded as a possible military asset of the highest importance. This thought was particularly emphasized when the nation observed Defense Day, earlier in the present month, as an occasion for a general survey of our military strength and resources. You may be interested in the views expressed upon this subject by President Samuel Rea, of the Pennsylvania Railroad Company, in a public statement issued at the request of the Army authorities. Mr. Rea expressed the hope that one of the results of the Defense Day celebration would be: "To concentrate public attention more clearly upon the outstanding importance of our railroads as potential resources of military protection." Continuing, Mr. Rea said: "Transportation is, always has been, and always will be one of the basic considerations in conducting the strategy of war. For this reason, in some countries, the military value of railroads has at all times been looked upon as of greater importance than their commercial aspects, and indeed, many of the European lines were deliberately built and planned with a first thought to their utility in war.

Our own country does not need to go that length:; but we should realize clearly that the railroads must be a vital factor in any plans of national defense and for that reason, if for no other, should be given every opportunity and encouragement to develop and progress. If the fostering of a merchant marine is important for possible use in case of war, let me state my own earnest conviction that the fostering and encouraging of railroads, which are the physical ties of our national unity, is of still greater importance.

For commercial reasons alone our country requires the best railroads it can have, and needs a helpful and constructive attitude toward the transportation industry on the part of our legislative and regulative bodies. When we add to these considerations the vital part the railroads would necessarily play in the conduct of any war, and particularly should our shores be invaded, railroad "baiting" assumes the aspect of a deliberate assault upon our national safety and the undermining of our means of protection."

Whether in peace or war our railroads are, and must continue to be, a national asset in value and importance sceond to none, and the wisest and most sincere of our political leaders will always deal with them upon that basis. Railroad baiters have deservedly forfeited public confidence, and just as surely as this is true does it follow that those who promise constructive policies toward transportation deserve the support, and I may add, the votes of all thinking citizens. I know of no better or more important thought than this to leave with you at this time, when national elections of such importance are about to be decided.

J. D. CONWAY, Secretary.

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OF

PAPERS AND THEIR AUTHORS

PRESENTED BEFORE RAILWAY CLUBS DURING THE SEASON OF 1923-1924

COMPILED BY THE SOCIETY OF RAILWAY CLUB SECRETARIES

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John D. Conway, Secretary, 1841 Oliver Building,
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Official Proceedings—Railway Club of Pittsburgh, published monthly (except June, July and August, at Pittsburgh, Pennsylvania, for April 1, 1924.

State of Pennsylvania }
County of Allegheny } ss:

Before me, a Notary Public, in and for the State and County aforesaid, personally appeared J. D. Conway, Secretary, who, having been duly sworn according to law, deposes and says that he is Editor and Publisher of the Official Proceedings—Railway Club of Pittsburgh.

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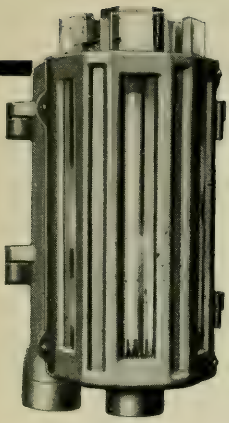

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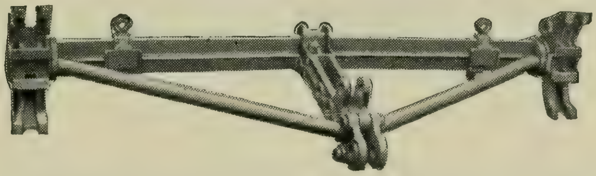

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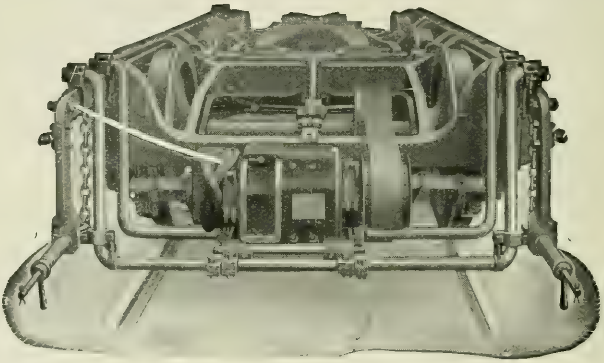

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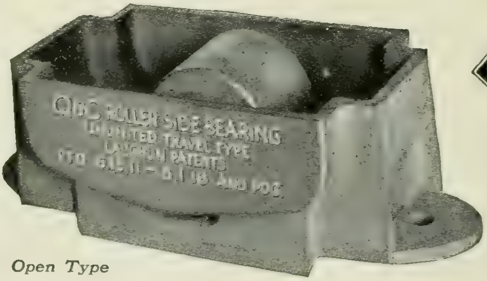

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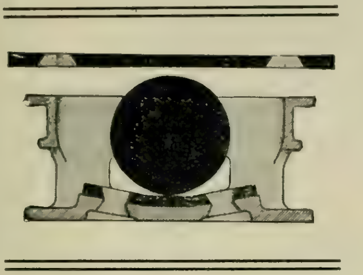

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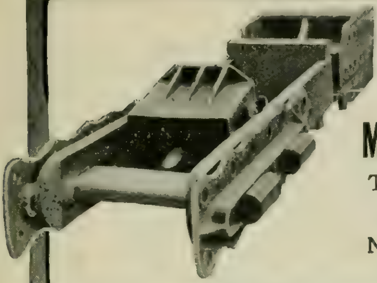

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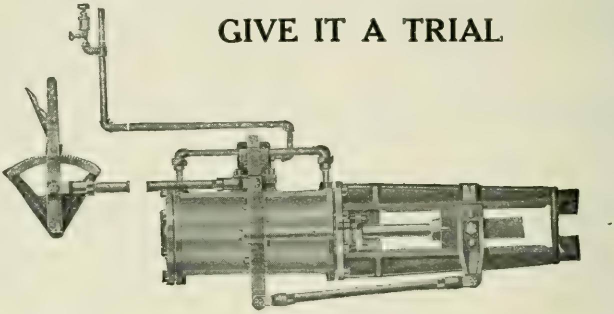

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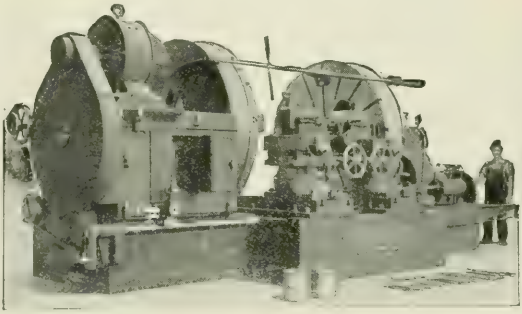

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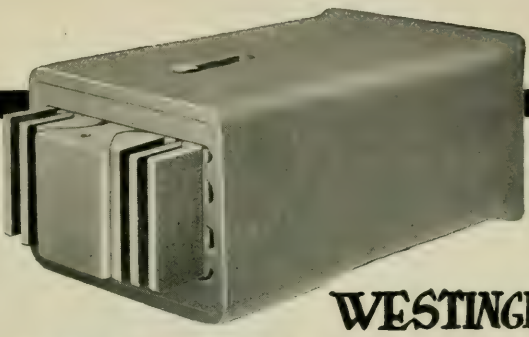

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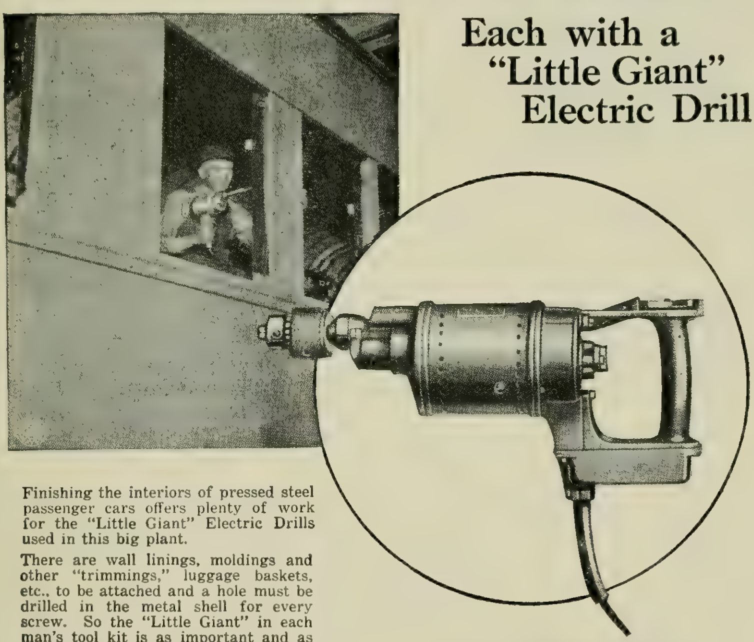

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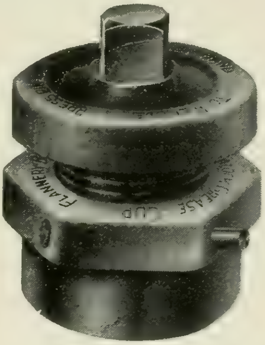

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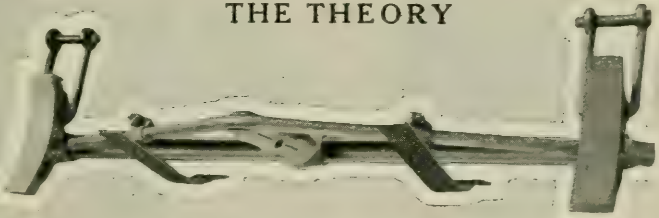

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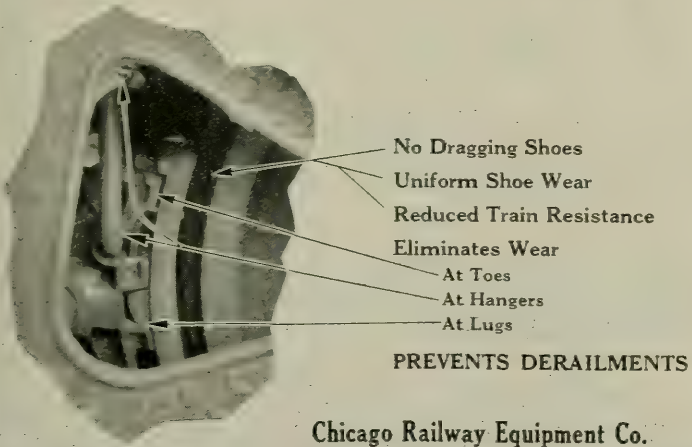

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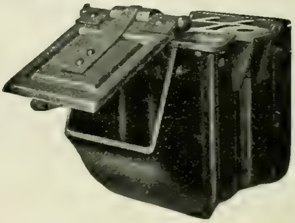

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Kindle, W. F.
King, J. W., Jr.
Kirkpatrick, H. F.
Knapp, A. D.
Kohl, H. J.
Kohute, Hilary, Geo.
Kroske, J. F.
Kummer, Jos. H.
Lake, Albert H.
Lanahan, Frank J.
Lanahan, J. S.
Landis, W. C.
Lang, W. C.
Laughlin, Harry
Laughlin, Richard J.
Loughner, Carl L.
Laurent, Geo. F.
Lawson, A. F.
Lehr, Harry W.
Lohr, Allen W.
Long, R. M.
Lowry, Wm. F., Jr.
Luddy, Wm. E.
Ludwig, C. F.
Lynde, Leslie E.
Lynn, William, Jr.
Lynn, Samuel
MacKenzie, J. B.
Manley, W. J.
Matchett, H. K.
Merscher, John
Miller, Ara J.
Miller, John
Milliken, C. C.
Minnick, F. G.
Mitchell, Frank K.
Mitchell, Wm. J.
Moir, W. B.
Montgomery. J. L.
Moore, Donald O.
Moran, J. V.
Morgan, A. L.
Morris, J. H.
Moyer, Oscar G .A.
Myers, Arnold
Myers, Walter H.
McAbee, W. S.
McKee, S. Frank
McKinstry, C. H.
McLaughlin, Howard B.
McNeill, J. Edward
Nieman, H. L.
Noble, Jesse A.
Noonan, W. C.
O'Connor, M. J.
Ogden, Geo. D.
Orchard, Chas.
Padfield, Archie
Painter, Joseph
Parke, F. H.
Parker, W. G.
Passino, F. J.
Passmore, H. E.
Patterson, Harry W.
Patterson, J. E.
Pehrson, Alfred K.
Peoples, Jas. S.

Perkins, Chas. F.
Pillar, Michael
Posteraro, S. F.
Proft, J. W.
Prouty, Eugene
Provost, S. W.
Rabold, W. E.
Ralston, John A.
Rauschart, E. A.
Redding, D. J.
Redding, J. H.
Redding, P. E.
Redding, R. D.
Redman, J. Thos.
Reed, Fred W.
Reeve, George
Reich, F. C.
Renshaw, W. B.
Rick, Robert C.
Riddle, D. E.
Roberts, James E.
Robinson, R. L.
Rogers, Robert, Jr.
Roth, Philipp J.
Ryan, D. W.
Salisbury, Wm.
Saltic, Thos.
Sandman, A. G.
Sattely, E. C.
Scheck, H. G.
Schrecongost, C. P.
Searles, E. J.
Seibert, Wm. L.
Severn, A. B.
Sewell, H. B.
Shannon, David E.
Shellenbarger, Herbert M.
Shirling, C. R.
Skuce, Chas. G.
Smith, John L.
Smith, Robert M.
Snyder, John W.
Stahlman, Miles C.
Steigerwald, H.
Stevens, L. V.
Stewart, Leonard S.
Stilwell, K. E.
Stucki, A.
Styers, J. V.
Sutherland, Lloyd
Taylor, H. G.
Taylor, Joseph M.
Thomas, E. K.
Timme, W. F.
Tipton, George M.
Trainer, M. N.
Tucker, John L.
Turner, E. Archer
Uhler, J. Lloyd
VanVranken, S. E.
Walter, W. A.
Walther, G. C.
Warrensford, Fred S.
Watts, J. J.
Weissert, W. J.
White, A. B.
White, C. M.
Wilkinson, F. C.
Willoughby, Frank R.
Wilson, D. L.
Winell, Karl O.
Winslow, Sidney H.
Wolf, H. M.
Wright, James H.
Wyke, J. W.
Young, F. C.
Zimmerman, Samuel

VISITORS

Adams, L. F.
Ainor, J. C.
Altsman, W. H.
Anderson, F. W.
Arnold, D. R.
Arnold, J. J.
Ashton, Wm. A.
Bennett, G. W.
Bennett, Raleigh H.
Bevan, G. W.
Bevan, P. A.
Beymer, G. H.
Billings, Murray N.
Bishop, R. W.
Bochert, Carl G.
Boehm, Alex. C.
Boiselle, Ray
Bosan, Chas. J.
Bosley, N. D.
Boyden, J. A.

Brewer, H. W.
Broge, Carl F.
Brookes, John S.
Brown, W. H.
Burgess, T. S.
Burriss, Walter C.
Byer, Jesse P.
Cadwalloder, T. M.
Calvert, John
Cameron, M. B.
Campbell, G. E.
Campbell, W. M.
Cannon, Thos. L.
Carroll, Walter S.
Charlton, Robert
Clifford, E. T.
Collins, H. M.
Copeland, T. T.
Crawford, H. C.
Craspa, August J.
Davison, B. C.
Denser, J. M.
Duerr, J. B.
Dougan, Michael
Dugrud, J.
Duncan, T. S.
Durell, W. A.
Elias, Frank
England, D. C.
Ensminger, Edgar
Fagan, R.
Farrington, Arthur R.
Farrington, Robert J.
Fields, D. S.
Fisher, W. R.
Flynn, E. E.
Forrester, J. B.
Fox, Geo. W.
Fremere, Chas.
Fritz, A. A.
Fundis, W. A.
Galbraith, Robert M.
Gartside, R. R.
Graham, J. A.
Griswold, W. W.
Gross, Tully A.
Groves, David
Hagan, J. S.
Haller, N. M.
Hann, H. E.
Hansen, Jos.
Hare, Scott, Jr.
Harper, Paul S.
Hayes, Geo. W.
Heisiemann, G. W.
Helbling, C. P.
Holmes, R. B.
Horner, R. J.
Howe, Harry
Howe, W. Frank
Humes, H. L.
Hykes, W. H.
Jena, Theo. J.
Jenkin, J. G.
Jex, W. F.
Johnston, F. Perry
Jones, P.
Jones, Richard T.
Jordan, F. M.
Joyce, T. J.
Jungbluth, Herbert A.
Kelin, A. W.
Kelley, Henry T.
Kerr, Clark R.
Kibler, Harold
Kihre, Chas.
Kirkpatrick, W. R.
Kleemann, C. W.
Kumer, J. R., Jr.
Lafferty, J. A.
Lamb, W. J.
Lang, Norman E.
Laughlin, Jas.
Laurent, A. J.
Lawson, A. B.
Leonard, C. W.
Levin, A. J.
Lindberg, W. N.
Long, Walter
Loughridge, H. W.
Lore, Robert
Lyons, J. C.
Mahan, W. C.
Maple, Thos. S.
Markley, F. A.
Marlow, G. A.
Marrison, R. C.
Marx, Frank J.
Marx, Gilbert J.
Mason, S. O.
Melvin, C. G.
Miller, Geo.
Miller, Geo. H.
Miller, W. S.

Milline, E. H.
Montgomery, T. E.
Montgomery, W. E.
Myers, Elmer J.
Myers, Francis C.
McBride, J. L.
McCloskey, J. C.
MacCumbee, A. C.
McGann, J. F.
McIntyre, R. C.
McKinley, Arch
McNabt, John J.
Nauman, H.
Oakley, Geo. E.
Oberlin, A. C.
Obermeier, L. J.
O'Neil, J. T.
Orme, Geo. G.
Orndorff, J. R.
Parker, C. H.
Parsons, T. W.
Patmor, H. F.
Penhale, W. D.
Phillips, Wm. U.
Phlegar, A. B.
Pickford, Jos. W.
Pitt, R. V.
Polchemice, Geo.
Peiffer, Chas. E.
Purnell, C. S.
Reblin, T. S.
Reblin, Walter C.
Record, J. F.
Reinhardt, A. L.
Reiser, Fred, Jr.
Robinson, G. A.
Robinson, H. J.
Rodebaugh, John F.
Rodgers, Jos. W.
Rowney, D.
Roy, W. H.
Ryan, Wm. F.
Saeger, Hugh
Schmid, W. L.
Schmidt, A. C.
Schmitt, A. J.
Schmitt, Wm. F.
Schrontz, S. B.
Shannon, W. R.
Sherrick, Windell P.
Shimer, J. H.
Shriver, Wm. W.
Shropshire, Paul
Sitterly, H. W.
Skiles, Sidney M., Jr.
Smiley, A. L.
Smith, O. W.
Smith, R. W.
Smith, Sion B.
Sneck, H.
Snyder, G. H.
Spencer, J. B.
Stanek, Jos. E.
Steadman, E. G.
Stewart, C. D.
Stilley, T. J.
Strickler, Floyd M.
Supinger, H. B.
Terrill, E. F.
Thornton, H.
Thomas, C. N.
Tinker, James B.
Viess, Manuel
Wagner, R. W.
Walter, Karl
Waterman, E. H.
Welwood, J. S.
Wentworth, A. S.
Westlund, W. H.
White, A. A.
Whitock, C. E.
Winnett, Clarkson
Wilson, H. J.
Wood, H. N.
Wright, Edw. W.
Yingling, C. C.
Zubaly, Elmer W.

The call of the roll was dispensed with, the record of attendance being obtained through the registration cards.

The reading of the minutes of the last meeting was dispensed with, as they are to appear in printed form.

The Secretary read the following list of applications for membership:

Arnold, J. J., Sales Dept., Pressed Steel Car Co., 1915 Farmers Bank Bldg., Pittsburgh, Pa. Recommended by C. C. Clark.

Conboy, Norman J., City Frt. Agt., Pacific Mail Steamship Co., 410 State Theater Bldg., Pittsburgh, Pa. Recommended by Charles Thomas.

Copeland, T. A., Asst. T. M., P. & L. E. Railroad Co., Monessen, Pa. Recommended by Charles Thomas.

Cravan, William I., Machinist, Penna. R. R. System, Box 173, Trafford, Pa. Recommended by W. A. Johnston.

Farrington, Robert J., Chf. P. W. Insp'r., P. & L. E. R. R., 1149 Wayne Ave., McKees Rocks, Pa. Recommended by Samuel Lynn.

Gellatly, William R., Asst. Sales Agt., Standard Motor Truck Co., 1120 Frick Bldg., Pittsburgh, Pa. Recommended by Wm. C. Hansen.

Leonard, C. W., Salesman, Independent Pneumatic Tool Co., 718 Bessemer Bldg., Pittsburgh, Pa. Recommended by F. J. Passino.

Long, Walter, Walter Long Manufacturing Co., 14th and Muriel Sts., Pittsburgh, Pa. Recommended by Samuel Lynn.

McGrath, John J., Train Dispatcher, P. & L. E. Railroad Co., Pittsburgh, Pa. Recommended by Charles Thomas.

Orndorff, J. R., Dist. Storekeeper, B. & O. R. R., Glenwood Shops, Pittsburgh, Pa. Recommended by J. F. Kroske.

Osborne, William J., Gen. Electric Forc., Union R. R., 8 Norman St., Duquesne, Pa. Recommended by A. F. Coulter.

Rodibaugh, J. T., Gen. Y. M., P. & L. E. Railroad Co., McKees Rocks, Pa. Recommended by Charles Thomas.

Stinemetz, W. R., Mgr. Heavy Trac. Div. Rwy. Sales, Westinghouse Elec. & Mfg. Co., 760 Hill Ave., Wilkinsburg, Pa. Recommended by D. J. Redding.

Toussaint, R., Chief of Police, P. & L. E. Railroad Co., Pittsburgh, Pa. Recommended by Charles Thomas.

Waterman, Edwin H., Asst. Car Fore., Union R. R., R. F. D. No. 1, Box 338, Homestead, Pa. Recommended by A. F. Coulter.

Weitzel, Carl E., Gang Fore., Union R. R., 809 Flemington St., Pittsburgh, Pa. Recommended by A. F. Coulter.

Wilson, Henry J., Rep., A. O. Norton, Inc., 440 Brookline Ave., Boston, Mass. Recommended by H. E. Passmore.

PRESIDENT: As soon as these applications have been approved by the Executive Committee, the gentlemen will become members upon payment of the year's dues.

The Secretary announced the death of the following members: George M. Crock, Engineer, Penna. R. R. System, died during 1923: Joseph Dalzell, Foreman Car Inspectors, Penna. R. R. System, died November 5, 1923; Willard A. Smith, President, The Railway Review, died November 29, 1923; John L. Smith, Supt. Motive Power & Equipment, Pittsburgh, Shawmut & Northern R. R., died April 15, 1924; M. E. George, Car Foreman, Union R. R., died June 16, 1924.

PRESIDENT: An appropriate memorial will appear in the Official Proceedings of the Club.

As this is the Annual Meeting, the next order of business is the presentation of the Annual Reports of the Secretary and Treasurer. We will first hear the report of the Secretary.

SECRETARY'S REPORT

Pittsburgh, Pa., October 23, 1924.

To the Officers and Members of
The Railway Club of Pittsburgh.

Gentlemen:

The following is a summary of membership and financial statement for the fiscal year ended October 23, 1924:

MEMBERSHIP

Reported last year	1,075	
Received into membership during the year	168	
		1,243
Suspended, non-payment of dues	94	
Resigned	53	
Loss of address	13	
Died	10	
		170
Present membership		1,073

Of the above membership four are honorary. They are: D. C. Buell, Samuel O. Dunn, Julian Kennedy and John A. Penton.

NAMES OF DECEASED MEMBERS

The following deaths were reported during the year 1923-1924: George M. Crock, Joseph Dalzell, M. E. George, John Keiser, Stephen C. Mason, Jesse R. Meade, John L. Smith, Willard A. Smith, E. Thomas and A. R. Thurlby.

FINANCIAL

Receipts

In hands of Treasurer at close of last year	$5,346.55	
From dues	3,165.00	
From advertisements	1,357.88	
From sale of tickets, Smoker Oct. 25, 1923	459.00	
Cash collected for dinner Oct. 25, 1923	172.00	
From sale of Official Proceedings	6.00	
From incidentals	23.00	
From interest, Liberty Bonds and Bank Balance	141.79	
		$10,671.22

Disbursements

Printing Proceedings, notices, mailing, etc.	$2,424.93	
Hall, luncheon, cigars, etc., for meetings	853.27	
Reporting proceedings of meetings	180.00	
Luncheon, entertainment, etc., Smoker Oct. 25, 1923	830.50	
Messenger service and affidavits	20.00	
Moving pictures	50.00	
Premium on bond, Treasurer and Secretary	17.50	
Lock box for Treasurer	2.00	
Incidentals	11.50	
Salary of Secretary and advertising expenses	735.79	
		$ 5,125.49

Net balance ....$ 5,545.73

Cash is made up of $2,545.73 and $3,000.00 in Liberty bonds.

J. D. CONWAY, Secretary.

Approved: L. H. TURNER, Chairman.

D. J. REDDING
F. R. McFEATTERS
A. G. MITCHELL
F. M. McNULTY
J. G. CODE
D. M. HOWE
J. A. SPIELMANN
H. H. MAXFIELD
FRANK J. LANAHAN
SAMUEL LYNN
D. F. CRAWFORD
GEO. D. OGDEN

Executive Committee

Upon motion the report was accepted and directed to be inserted in the minutes of the meeting.

PRESIDENT: Next we will hear the report of the Treasurer.

TREASURER'S REPORT

Pittsburgh, Pa., October 23, 1924.

To the Officers and Members of
The Railway Club of Pittsburgh.

Gentlemen:

I herewith submit Treasurer's report for year ended October 23rd, 1924:

ON HAND AND RECEIPTS

On hand October 25th, 1923, including three $1,000.00 Liberty Bonds	$5,346.55	
Received from Secretary during year	4,917.38	
Interest on Bonds and Bank Balance	141.79	
Total		$10,405.72

DISBURSEMENTS

Paid on Secretary's Vouchers, 460 to 486, inclusive	$ 4,859.99
Balance October 23rd, 1924	$ 5,545.73

RESOURCES

Three Liberty Bonds, $1,000.00 each	$3,000.00	
Cash in bank	2,545.73	
Total		$ 5,545.73

F. H. STARK, Treasurer.

Approved:

L. H. TURNER, Chairman.

D. J. REDDING
F. R. McFEATTERS
A. G. MITCHELL
F. M. McNULTY
J. G. CODE
D. M. HOWE

J. A. SPIELMANN
H. H. MAXFIELD
FRANK J. LANAHAN
SAMUEL LYNN
D. F. CRAWFORD
GEO. D. OGDEN
Executive Committee.

Upon motion the report was accepted and directed to be inserted in the minutes of the meeting.

We have audited the accounts of the Secretary and Treasurer and find them correct as above shown.

E. C. SATTLEY, Chairman,
E. A. JOHNSON,
C. O. DAMBACH,
E. J. SEARLES,
Members Finance Committee.

PRESIDENT: Next in order is the report of the election of Officers.

The report of the Tellers of Election was read, as follows:

TELLERS' REPORT

PRESIDENT—A. Stucki.

FIRST VICE PRESIDENT—Frank G. Minnick.

SECOND VICE PRESIDENT—George W. Wildin.

TREASURER—F. H. Stark.

SECRETARY—J. D. Conway.

EXECUTIVE COMMITTEE—L. H. Turner, Chairman; D. J. Redding, F. R. McFeatters, A. G. Mitchell, F. M. McNulty, J. G. Code, D. M. Howe, J. A. Spielmann, H. H. Maxfield, Frank J. Lanahan, Samuel Lynn, D. F. Crawford, George D. Ogden.

FINANCE COMMITTEE—E. C. Sattley, Chairman; C. O. Dambach, E. A. Johnson, E. J. Searles, J. A. Beattie.

RECEPTION COMMITTEE—F. H. Freshwater, Chairman; W. E. Fowler, Jr., J. L. Smith, S. E. VanVranken, M. A. Smith, Col. H. C. Nutt.

MEMBERSHIP COMMITTEE—J. A. Ralston, Chairman; H. E. Chilcoat, A. D. Chittenden, J. L. Cunningham, E. J. Devans, Harry B. Kelly, Col. James Milliken, R. M. Long, M. W. Clement.

ENTERTAINMENT COMMITTEE — E. Emery, Chairman; Henry F. Gilg, Jos. H. Kummer.

SUBJECT COMMITTEE—Charles Orchard, Chairman; John B. Wright, J. S. Lanahan.

PRESIDENT OGDEN: It is now my pleasure to turn the chair over to my successor, your new President, Mr. Arnold Stucki. It now affords me much pleasure to present to you Mr. Stucki, President for the ensuing year.

MR. A. STUCKI: Gentlemen, Members and Officers of The Railway Club of Pittsburgh:—Mistakes will happen in the best regulated families and even in the well organized Railway Club of Pittsburgh. I say that because I feel that there are many members here who are better orators and far more able to assume this position than I am. But I must say that I have had a lively interest in this Club from the very beginning of its history. I remember just about twenty-five years ago I wrote to our dean, Mr. L. H. Turner, that I did not see any reason why we could not have a railway club in Pittsburgh, as well as in any other railway center. Gentlemen, you will all agree with me that I was right.

For the benefit of those who do not know me, may I say that I have been a member of this Club from its very inception and I have been privileged to read quite a few papers before the Club, some of which have gained notice both nationally and internationally. One of them was first abstracted and then given in full by the International Railway Congress. Another one dwelt in some detail on the question of government ownership as I observed it in Europe. The statements made in that paper proved to be true, not because I could see farther ahead than anyone else, but simply because history will repeat itself. May I read to you just one paragraph of what I said at that time.

"Our political contests are, we all know, fought in a bitter way, simply because the existence of so many employes depends on the respective victory. Supposing we would add another million or two of such employes, would not this fight for supremacy become alarming?"

You all know the answer to this and I will not read any further, but I want to say one thing more. I do not want to take this chair as a sales agent for railroad supplies. I have been deeply interested in railroading all my life. In fact, that is all I know. By request I read the paper on car constructions for the States and Canada before the International Engineering Congress, and in San Francisco during the fall of 1915 I had the honor to preside over their Railway Section at that time. Railroading is my hobby. When I look over this crowd here I cannot help comparing it with what we had twenty-five years ago. We had no railway club then and most of us did not know what such a club meant. We knew our immediate co-workers on the same road and in the same department, but very few others. Now things are different. Mr. Conway just told us that we have 1,073 members in this club. Each one of us has the opportunity and privelege of getting acquainted with 1,072 other members of many different railroads and businesses and different departments, a thing we could not do before. And, as our retiring President just said, we can have all this for an investment of $3.00. Just let us see what all we do get for this outlay. We can associate with our superior officers in a social way; we get nine Proceedings, each one of which is as good as any lecture in a technical school; we get a luncheon that is second to none; and last, but not least, we have the privilege of the floor. You are all expected to take part in the discussion, not only for your own sake, but for the sake of the Club. We want the information you have on hand. Is it any wonder the Club grows as fast as it does?

It reminds me of an experience I had in my garden. Had a bed of asparagus and a few rows of rhubarb and strawberries and to finish off against my lawn put in a row of red raspberries. Shortly after they began to spread out into my lawn and I had to pull out sprouts continually. To stop this I finally dug a ditch and put down a plank, thinking that would keep the roots from spreading any more. Do you know what happened? In less than no time the roots pushed through that plank and kept on growing merrily. That reminds me of our Railway Club. No matter what conditions are, it keeps on growing and with the hearty support of you all, I look for a continued growth and a successful year. You have made a good start already. You heard Mr. Redding read the names of the Officers and especially the Committees, and you will agree that we must succeed with such Committees.

Before turning the program over to our Entertainment Committee, I wish to have you see and hear our new Vice President, Mr. F. G. Minnick.

MR. F. G. MINNICK: Mr. President and Gentlemen: I have been a member of The Railway Club of Pittsburgh for quite a number of years. I have not been able to attend the meetings as regularly as I would have liked, but I want to say that while I have missed some meetings, I have never missed the pleasure of reading the Proceedings the minute they reached me and each time I felt, either at the meeting or in reading the Proceedings, that I received some benefit. That is not to be wondered at when you consider the class of men who go to make up The Railway Club of Pittsburgh and who read the papers presented before it. I consider it a very great honor to have the privilege of being one of its officers. I thank you.

PRESIDENT STUCKI: There is just one other matter. One of our highly esteemed past Presidents has been asked to say a word to you and I will now call on him. Mr. Frank J. Lanahan.

MR. FRANK J. LANAHAN: When the eminent French psychologist, Eugene Coue, coined the world-renowned formula for all ills, "Day by day in every way, I am getting better and better," he unwittingly, aptly and accurately depicted the condition of the Railway Club of Pittsburgh. Each year, each month and each day it is better, more influential and enlarges not alone numerically, but increases its cycle of usefulness.

Thoroughly democratic in spirit, it is the meeting place on common ground of our citizenry. Entirely absent is class distinction, for worker from riff-rack track to the humble machinist's helper in the shop, has the same standing as the occupant of the swivel chair by the mahogany desk in the General Manager's office. The educational features are par excellent. The opportunity is afforded the membership of listening every month to intelligent presentations of live topics, and at the completion, permission is enjoyed by every member, of participating in the general discussion of the subject of the evening.

An accurate stenographic report is given in official proceedings and monthly is this mailed to the individual membership and in the quiet of office or home, can be perused at leisure what has transpired at the preceding meeting.

Then, too, is the social intercourse, the meeting of genial souls under the Club's auspices, where boss and the employe, with all barriers removed, meet man to man for the discussion, without any false sense of propriety. Each meeting is followed by an elaborate and tasty lunch, which, under the personal supervision of our efficient and competent Secretary, has ever proved satisfactory to each and every attendant in the past.

When one realizes that all this is secured for the infinitesimally small sum of Three Dollars, one wonders how the miracle is performed, and the conclusion is quite natural, by disseminating this information, there will be a large influx in the way of applications that will completely deluge the Secretary in his official duties.

At one of our meetings some years ago, when the Americus Club was our headquarters and there was under consideration a delicate problem between "Government and Transportation Companies," in response to the invitation to express his views on the matter before the Club, there arose from rather a spare audience—for the night was most inclement—a gentleman who was a stranger to most of his hearers. Brief were his remarks, but they were nuggets of wisdom that furnished ample food for thought, and as his voice was soft, his manner kindly and his words conciliatory, he left a splendid impression which was considerably augmented by reciting a particularly effective piece of poetry, entitled, "We Would Love Each Other Better If We Only Understood." Quite evident, the members of the Railway Club took literally the spirit of this poem and tried out the theory propounded and from that day endeavored to know the gentleman better and ascertain if the results would be demonstrated in the better acquaintance with the subject.

Tonight, gentlemen, it is the universal verdict that he who recited those poetic lines at the old Americus Club was a prophet, for knowing him better had engendered respect, admiration and pronounced affection. From Committeeman, he arose by successive steps through First and Second Vice Presidency and for the past year, has been our chief executive. His scrupulous attention to the duties of his office, his kindly and considerate manner, his fairness to all and an intelligent conception of the functioning as President, has earned the approbation of the entire membership of the Club. With regret do we see him pass on to take his place as a Past President on the important Executive Committee. Undoubtedly he will be missed for the genial smile, that ever illuminated his well rounded countenance, his cheery words that could be heard in the remotest corners of our large meeting hall, and his happy faculty of ever saying the right thing at the right time and in the right manner, will be but a memory. As our President, he will be gone but not forgotten. In this connection there occurs to me the thought of what he has attained, so well expressed by the writer in the verse:

"Not how did he go, but how did he live,
  Not what did he gain, but what did he give.
These are the units of worth to measure a man
  As a man regardless of birth.

Not what was his station, but had he a heart,
  And how did he play his God-given part?
Was he ever ready with word of good cheer
  To bring back the smile and banish the tear?

Not what was his Church, nor what was his Creed,
  But was he ever ready to help those really in need?
Not what did the piece in the paper say,
  But how many were sorry that he passed away?"

Why, George Ogden, every single member of the Club is sorry that you passed away, and in some visible and evident manner tonight do we strive to convey to you the sentiment that fills us in your relinquishing the duties of your high office and for that purpose, present to you, with our deep affection, these symbols of appreciation of what you have done in our behalf in the twelve months just closing. Collectively they typify retirement and we hope that you accept them in the spirit in which they are tendered. Many, we hope, will be the occasions when midst the surroundings of your artistic home, in company with your good wife, that the ease of the arm chair, the soft glow from the reading lamp, the fragrance of the Havana, clothed in the beauty of the lounging gown, and your feet encased in the comfortable slippers, that your thoughts will revert to the Club that you have served so faithfully and particularly carry the picture of your friends assembled here in tribute to your service and wishing you God speed on your further journey through life.

(At this point the retiring President, Mr. Geo. D. Ogden, was presented the following very handsome and useful articles: A reclining chair, side table, reading lamp, smoking outfit, lounging robe and slippers.)

MR. GEO. D. OGDEN: Well, gentlemen, I just simply cannot do it. You have it on me and I will have to admit it. I simply cannot come back with an edequate expression of my feelings. Any task I have had to perform this past year was simple in comparison; but the hard task of this past year's work is now upon me. I thank you from the bottom of my heart. It has been a joyous year to me. I see such tremendous possibilities in the work that I can only wonder what the future has in store for this wonderful Club.

These remembrances I shall always prize highly. I shall always think of the pleasant evenings I have enjoyed in this Club. I hope to get back occasionally and when I do I propose to enter into the spirit of the occasion and enjoy every moment to the utmost.

It was my privilege to hear one of our distinguished citizens very recently relate a most delightful story of an experience he had upon returning to Pittsburgh only a few weeks ago. It was Mr. Schwab, and one of his old associates had arranged a little homecoming for him at Homestead and it filled his heart with joy. He stated that many a time that day he was obliged to force the tears back. He told of one incident that was especially enjoyable. There is an undertaker out there who has been fairly prosperous and he had always been very friendly with Mr. Schwab. On this occasion he wanted to do him great honor so he obtained one of Mr. Schwab's photographs, draped it with our flag and hung it in his window with the inscription beneath it in large letters "WELCOME."

I do want to commend to you a deep interest in this Club. It is most inspiring work, the most inspiring I have ever had any connection with. It is nothing more or less than cooperation in the highest sense. As an interpretation of that word it might be expressed in these few lines:

If I knew you and you knew me
It's seldom that we'd disagree,
But never having yet clasped hand,
Both sometimes fail to understand

That each intends to do what's right
And treat the other honor bright.
It's seldom that we'd disagree,
If I knew you and you knew me.

I thank you.

PRESIDENT STUCKI: This is the end of our annual business meeting, and we will now turn the evening over to the Chairman of the Entertainment Committee, Mr. Emery, who will take charge of the program.

A very brilliant and enjoyable program of entertainment followed, after which a buffet lunch was served.

J. D. CONWAY, Secretary.

CONSTITUTION

ARTICLE I.

The name of this organization shall be "THE RAILWAY CLUB OF PITTSBURGH."

ARTICLE II.

OBJECTS

The objects of this Club shall be mutual intercourse for the acquirement of knowledge, by reports and discussion, for the improvement of railway operation, construction, maintenance and equipment, and to bring into closer relationship men employed in railway work and kindred interests.

ARTICLE III.

MEMBERSHIP

SECTION, 1. The membership of this Club shall consist of persons interested in any department of railway service or kindred interests, or persons recommended by the Executive Committee upon the payment of the annual dues for the current year.

SEC. 2. Persons may become honorary members of this Club by a unanimous vote of all members present at any of its regular meetings, and shall be entitled to all the privileges of membership and not be subject to the payment of dues or assessments.

ARTICLE IV.

OFFICERS

The officers of this club shall consist of a President, First Vice-President, Second Vice-President, Secretary, Treasurer, Finance Committee consisting of five members, Membership Committee consisting of seven members, Entertainment Committee consisting of three members, Reception Committee consisting of six members, Subject Committee consisting of five members, and an Elective Executive Committee of three or more members, who shall serve a term of one year from the date of their election, unless a vacancy occurs, in which case a successor shall be elected to fill the unexpired term.

ARTICLE V.

DUTIES OF OFFICERS

SECTION 1. The President shall preside at all regular or special meetings of the Club and perform all duties pertaining to a presiding officer; also serve as a member of the Executive Committee.

SEC. 2. The First Vice-President, in the absence of the President, will perform all the duties of that officer; the Second Vice-President, in the absence of the President and First Vice-President, will perform the duties of the presiding officer. The First and Second Vice-President shall also serve as members of the Executive Board.

SEC. 3. The Secretary will attend all meetings of the Club or Executive Committee, keep full minutes of their proceedings, preserve the records and documents of the Club, accept and turn over all moneys received to the Treasurer at least once a month, draw cheques for all bills presented when approved by a majority of the Executive Committee present at any meetings of the Club, or Executive Committee meeting. He shall have charge of the publication of the Club Proceeding and perform other routine work pertaining to the business affairs of the Club under the direction ot the Executive Committee.

Sec. 4. The Treasurer shall receipt for all moneys received from the Secretary, and deposit the same in the name of the Club within thirty days in a bank approved by the Executive Committee. All disbursements of the funds of the Club shall be by cheque signed by the Secretary and Treasurer.

SEC. 5. The Executive Committee will exercise a general supervision over the affairs of the Club and authorize all expenditures of its funds. The elective members of this Committee shall also perform the duties of an auditing committee to audit the accounts of the Club at the close of a term or at any time necessary to do so.

SEC. 6. The Finance Committee will have general supervision over the finances of the Club, and perform such duties as may be assigned them by the President or First and Second Vice-Presidents.

SEC. 7. The Membership Committee will perform such duties as may be assigned them by the President or First and Second

Vice-Presidents, and such other duties as may be proper for such a committee.

Sec. 8. The Entertainment Committee will perform such duties as may be assigned them by the President or First and Second Vice-Presidents, and such other duties as may be proper for such a committee.

ARTICLE VI.

ELECTION OF OFFICERS

Section 1. The officers shall be elected at the regular annual meeting as follows, except as otherwise provided for:

Sec. 2. Printed forms will be mailed to all the members of the Club, not less than twenty days previous to the annual meeting, by the elective members of the Executive Committee. These forms shall provide a method, so that each member may express his choice for the several offices to be filled.

Sec. 3. The elective members of the Executive Committee will present to the President the names of the members receiving the highest number of votes for each office, together with the number of votes received.

Sec. 4. The President will announce the result of the ballot and declare the election.

Sec. 5. Should two or more members receive the same number of votes, it shall be decided by a vote of the members present, by ballot.

ARTICLE VII.

AMENDMENTS

Amendments may be made to this Constitution by written request of ten members, presented at a regular meeting and decided by a two-thirds vote of the members present at the next regular meeting.

BY-LAWS

ARTICLE I.

MEETINGS

SECTION 1. The regular meetings of the Club shall be held at Pittsburgh, Pa., on the fourth Thursday of each month, except June, July and August, at 8 o'clock p. m.

SEC. 2. The annual meeting shall be held on the fourth Thursday of October each year.

SEC. 3. The President may, at such times as he deems expedient, or upon request of a quorum, call special meetings.

ARTICLE II.

QUORUM

At any regular or special meeting nine members shall constitute a quorum.

ARTICLE III.

DUES

SECTION 1. The annual dues of members shall be Two Dollars, payable in advance on or before the fourth Thursday of September each year.

SEC. 2. The annual subscription to the printed Proceedings of the Club shall be at the published price of One Dollar. Each member of the Club shall pay for both dues and subscription. Dues and subscription paid by members proposed at the meetings in September or October shall be credited for the following fiscal year.

SEC. 3. At the annual meeting members whose dues and subscription are unpaid shall be dropped from the roll after due notice mailed them at least thirty days previous.

SEC. 4. Members suspended for non-payment of dues shall not be reinstated until all arrearages have been paid.

ARTICLE IV.

ORDER OF BUSINESS

1—Roll call.
2—Reading of the minutes.
3—Announcements of new members.
4—Reports of Committees.
5—Communications, notices, etc.
6—Unfinished business.
7—New business.
8—Recess.
9—Discussion of subjects presented at previous meeting.
10—Appointment of committees.
11—Election of officers.
12—Announcements.
13—Financial reports or statements.
14—Adjournment.

ARTICLE V.

SUBJECTS—PUBLICATIONS

SECTION 1. The Subject Committee will provide the papers or matter for discussion at each regular meeting.

SEC. 2. The proceedings or such portion as the Executive Committee may approve shall be published (standard size, 6x9 inches) and mailed to the members of the Club or other similar clubs with which exchange is made.

ARTICLE VI.

The stenographic report of the meetings will be confined to resolutions, motions and discussions of papers unless otherwise directed by the presiding officer.

ARTICLE VII.

AMENDMENTS

These By-Laws may be amended by written request of ten members, presented at a regular meeting, and a two-thirds vote of the members present at the next meeting.

In Memoriam

GEORGE M. CROCK
Died during 1923

JOSEPH DALZELL
Died November 5, 1923

WILLARD A. SMITH
Died November 29, 1923

JOHN L. SMITH
Died April 15, 1924

M. E. GEORGE
Died June 16, 1924

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912.

Official Proceedings—Railway Club of Pittsburgh, published monthly (except June, July and August, at Pittsburgh, Pennsylvania, for October 1, 1924.

STATE OF PENNSYLVANIA }
COUNTY OF ALLEGHENY } ss:

Before me, a Notary Public, in and for the State and County aforesaid, personally appeared J. D. Conway, Secretary, who, having been duly sworn according to law, deposes and says that he is Editor and Publisher of the Official Proceedings—Railway Club of Pittsburgh.

Publisher, Official Proceedings, Railway Club of Pittsburgh.

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Business Manager, J. D. Conway, 515 Grandview Ave., 19th Ward, Pittsburgh, Pa.

President, Geo. D. Ogden, Philadelphia, Pa.

Vice President, A. Stucki, Pittsburgh, Pa.

Secretary, J. D. Conway, Pittsburgh, Pa.

Treasurer, F. H. Stark, Coraopolis, Pa.

Known Bondholders—None.

J. D. CONWAY, Publisher.

Sworn to and subscribed before me, this 22d day of September, 1924.

[SEAL] SUE B. FRITZ, Notary Public.

(My commission expires February 21, 1927.)

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